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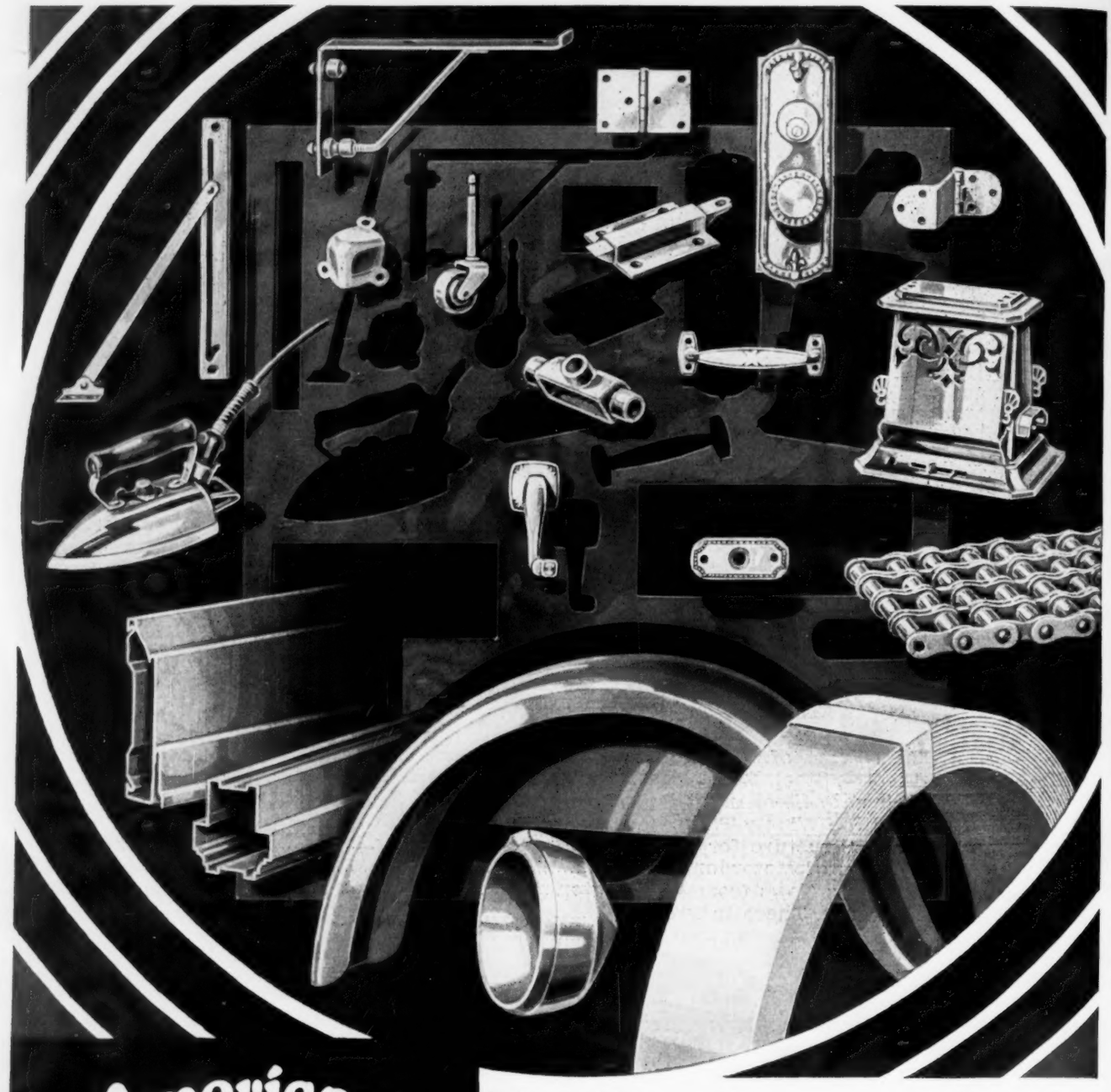

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1831 — MORE THAN 100 YEARS of PROGRESS IN WIRE MAKING — 1933

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Volume 92 Number 11

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION • PROCESSING • DISTRIBUTION • USE

The Week in Perspective

AWARTIME psychology which is interning fear and mobilizing confidence has enabled the nation to re-form its lines and prepare not only to recover the ground lost recently but also to initiate a long-term offensive. Complete suspension of banking operations early last week dropped iron and steel, as all industry, to an abject new low for the depression, but at the same time prepared it for a compensating rebound when the new administration at Washington asserted dictatorial powers (p. 20). Politically, the parallel between 30 years ago, when Theodore Roosevelt wielded the big stick against "malefactors of great wealth" and today with Franklin D. Roosevelt indicting "the money changers" is both striking and heartening.

Watch for First Signs of Inflation

From the standpoint of tonnage, which understandably is iron and steel's yardstick, the potentialities of the past few days are enormous. Interlinked with the conviction that the bottom of the depression has been rounded is the growing suggestion that expansion of currency, concomitant with reopening of banks, will bring some degree of inflation (p. 13). No actual advance coverage which could be ascribed to a speculation against advancing prices is reported, but the markets are being closely watched. At Chicago, a few feelers have been put out. Withdrawal of prices already announced for the second quarter will be an indication of better times just ahead.

May Speculate in Rebuilt Inventories

Market reports record (p. 39) a rapid transit from despondency to expectancy in the past week. A decline to 13½ per cent in the steel operating rate in the week ended March 11 is regarded as ancient history, considering the progress made at Washington from Thursday on. The fact that suspensions rather than cancellations were the rule in the dark days of early last week is encouraging. Advances of $5 to $10 per ton in the volatile nonferrous metals may be the precursor of a stiffening in the more flabby ferrous price structure. Were consumers to build up their inventories to only the attenuated normal of 18 months ago production would be doubled and a modest advance in prices shored up.

Detroit Hopes to Convert Cash Into Autos

Detroit, with its local situation relieved by an issue of $27,000,000 in scrip, is annexing for itself the first impulse of recovery (p. 16). Funds freed from fear and hoarding will re-

This pyramid in Shenandoah national park honors Governor Spotswood, who smelted bog ore for iron from which horseshoes for the gallants of early Virginia days were forged

lease the large dammed-up replacement market, while inflation and a conversion of money into property will find automobile dealers eager and prepared to accommodate, is the Detroit viewpoint. At the moment, releases for material from the automotive industry are exceedingly meager.

Rotary-Cast Steel Plant Goes to Detroit

Detroit, incidentally, wins the first plant in which a revolutionary process for manufacturing steel will be placed on a commercial basis (p. 11). The 100 per cent scrap melt of an electric furnace will be tapped into a rotary mold, a 2-ton circular bloom being ready in 10 minutes for final rolling into cold-drawn bars. . . . Award of 1250 tons of structurals for this steel plant is a factor in pushing structural awards (p. 46) up to the high level of 16,055 tons. Topping all new orders is 5000 tons for the St. Paul postoffice. . . . For the orthodox open-hearth steel furnace the proper design of buckstays is important (p. 31), the cost varying from $2000 to more than $4000 per set.

New Price Plan for Castings, Sheets, Tubing

Perhaps fortuitously, steel founders are adopting a new pricing system (p. 14) which fairly takes into account the size, number of pieces, analysis, character of pattern, intricacy of cores and other factors, thus putting this industry on an equitable basis as the "new deal" in business approaches. . . . Sheet mills, also setting their house in order, are issuing (p. 40) new gage differentials and size extras. . . . New quantity differentials have been promulgated (p. 48) for mechanical seamless steel tubing. . . . An English manufacturer is offering (p. 34) high-tensile tubing, closed at the bottom to form a conical point, as a substitute for wooden mine props.

Roll Steel Under 6500-Ton Pressure

Forged steel plates, flame cut to shape and electrically welded together, are being used for roll housings for an 84-inch four-high cold rolling mill to be installed in the Chicago district (p. 23). This laminated plate construction, first of its type, is expected to prove satisfactory both from the standpoint of cost and performance. A roll pressure of 13,000,000 pounds, believed to be the greatest ever used in rolling steel, will be employed in this mill. A self-contained screwdown mechanism sets inside the housing link and exerts pressure between the rolls and the inside of the top of the link.

The VOICE of INDUSTRY

Communications appearing here do not necessarily reflect the opinion of STEEL *or of its editors.*

"Origin" Values of Imported Pig Iron Decline Sharply

To the Editor:

We are enclosing herewith data covering Atlantic seaboard imports of pig iron from the United Kingdom, Netherlands and British India during the past two years and showing an almost unbroken downward price trend.

The table shows the actual tonnages that arrived monthly during 1931 and 1932 from each of the three countries mentioned, as well as the average monthly "point of origin" values. These per ton values represent true weighted averages of the shippers' declared valuation.

Pig Iron Imports into North Atlantic States from United Kingdom, Netherlands and British India

	Per Ton, Point of Origin			Gross Tons			
	United Kingd.	Nether- lands	Brit. India	United Kingd.	Nether- lands	British India	Total
1931							
Jan.	$19.96	$15.58	$10.72	50	633	7,718	8,401
Feb.	.....	15.06	12.66	.....	50	2,995	3,045
March	16.07	15.57	10.58	743	1,285	999	3,027
April	.....	14.92	11.10	.....	154	10,296	10,450
May	.....	14.19	7.98	.....	156	8,661	8,817
June	.....	14.81	9.13	.....	1,251	6,878	8,129
July	15.85	14.55	9.34	650	49	4,486	5,185
Aug.	.....	13.24	9.62	.....	50	743	793
Sept.	.....	13.41	8.92	.....	113	4,454	4,567
Oct.	.....	13.43	8.94	.....	162	2,373	2,535
Nov.	.....	11.70	8.94	.....	333	6,533	6,866
Dec.	.....	12.26	9.74	.....	104	290	394
Total					1,443	4,340	56,426	62,209
1932							
Jan.	9.77	12.49	9.35	100	5,108	2,658	7,866
Feb.	.....	11.79	9.16	.....	3,390	455	3,845
March	13.81	10.99	9.03	150	12,563	4,878	17,591
April	9.96	10.86	9.13	3,860	50	4,904	8,814
May	10.12	10.11	7.44	5,518	6,979	1,501	13,998
June	9.90	9.57	7.30	6,019	5,815	2,415	14,249
July	.....	.....	8.97	.....	.....	497	497
Aug.	.....	9.19	7.60	.....	4,760	1,306	6,066
Sept.	.....	8.53	7.20	.....	6,043	904	6,947
Oct.	.....	9.47	6.81	.....	14,095	1,102	15,197
Nov.	.....	9.16	6.62	.....	6,485	882	7,367
Dec.	8.96	9.17	6.45	4,666	6,034	1,385	12,085
Total				20,313	71,322	22,887	114,522
Grand Total				21,756	75,662	79,313	176,731

It is interesting to note that 1932 imports represent an increase over 1931 of almost 85 per cent, while at the same time shipments from domestic furnaces suffered a tremendous decline.

Per ton "point of origin" values on pig iron from the United Kingdom, Netherlands and British India declined during this two-year period 55 per cent, 41 per cent and 39 per cent, or an average decline of 45 per cent.

H. T. Outwater, Sales Manager,
Boston. Mystic Iron Works.

To the Editor:

I notice your article in the Feb. 27 issue on the inequality in wage rates. You haven't started into that—you know all the people in the country don't work by the hour. There are about 40 million of us work on the farm by the bushel. Those of us who can see our direct dependence on agriculture know that our customers are working for 10 and 15 cents an hour and have been for the past two years.

Lincoln, Nebr. Chas. D. Ammon,

Electric Steel, Rotary Cast, Bypasses Semifinishing Mills

NONDENDRITIC steel—a steel so closely grained as to be practically free from banding and directional properties in the cast and rolled states—which has been the objective of much research and is so revolutionary that it is practically unknown excepting as a laboratory product, has been developed.

Equally revolutionary is the process of producing it, the orthodox ingot casting and blooming operations being eliminated.

One hundred per cent steel scrap is charged into an electric furnace; the melt is quickly poured into a mold revolving at a high speed; the resulting circular 2-ton bloom, 7 x 7 inches in cross section and 10 feet in diameter, is sheared into the required number of arcuated sections; a flash heat brings these sections up to rolling temperature, and they are now ready for billet conversion on a 3-high breakdown mill.

Cold-drawn bars of standard analyses will be the first form in which this new steel is produced and marketed. A plant now is under construction at Detroit by the Rotary Electric Steel Co. (Michigan), with an estimated monthly capacity of 7500 tons, in the heart of one of the largest scrap markets in the country.

This process is a development of H. M. Naugle and A. J. Townsend, who seven years ago startled the steel world by the introduction of the 4-high continuous mill for the production of what originally was known as stripsheet—the only distinctive new product developed by the steel industry in this or any other country in 41 years.

This continuous mill was the basis for the construction of the Columbia Steel Co. plant at Butler, Pa., which is now a division of the American Rolling Mill Co., Middletown, O. The magnitude of this development may best be realized by the fact that at present there are ten mills in this country for rolling wide strip, which in normal times could produce in excess of 500,000 tons monthly working on No. 16 gage, 48-inch wide stock. And instead of the width being confined to 36 inches, as was the initial mill at Butler, Pa., the latest mill is capable of rolling stock up to 69 inches wide.

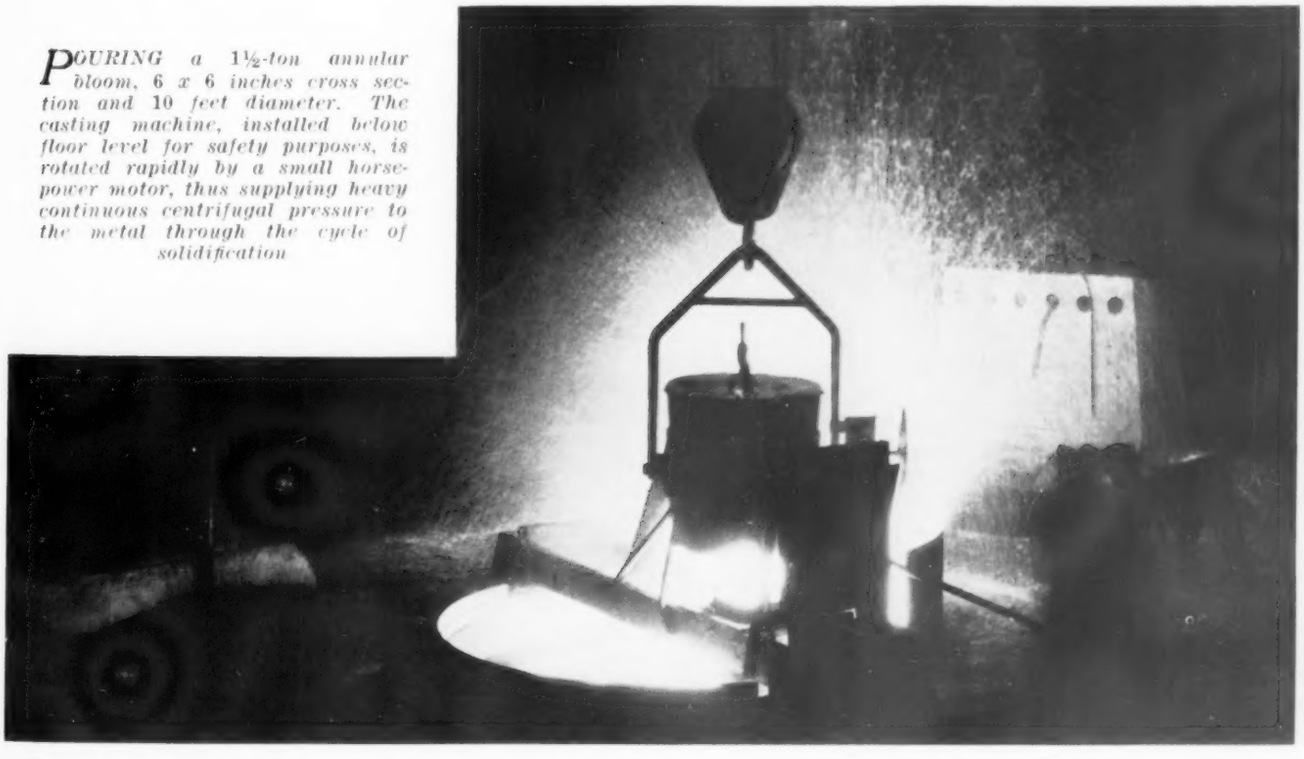
Messrs. Naugle and Townsend will be actively identified with the production and distribution of the new product, planning operation of a number of plants, of which the Rotary Electric Steel Co. (Michigan), located at Detroit, is the first. Structural steel for this plant has been placed and equipment is being ordered.

Before discussing the equipment and process of manufacturing the new steel in detail, a brief account of what led to their development will be of interest. At the outset, three factors invited investigation.

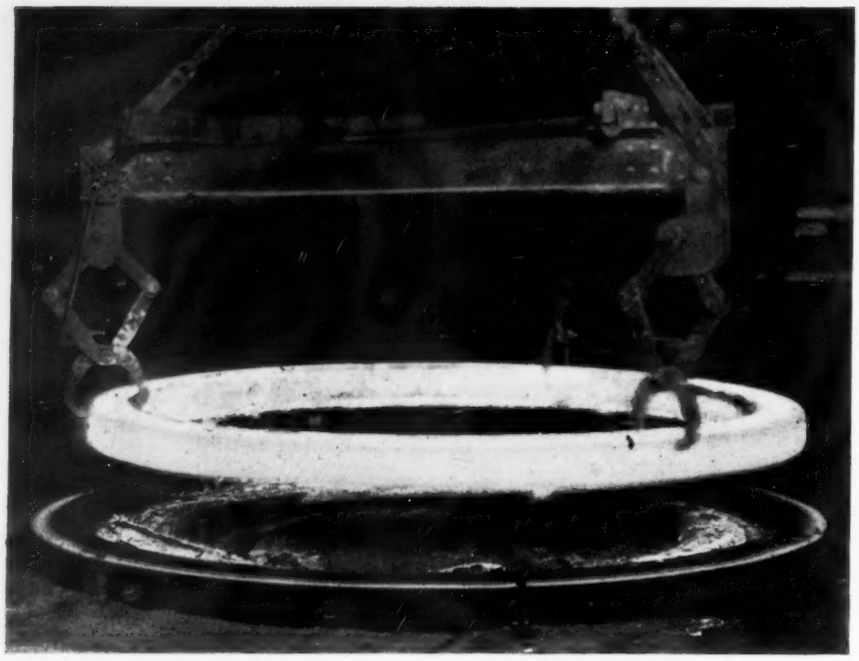
To obtain sound semifinished products from basic open-hearth steel, a croppage of about 20 per cent is necessary to insure against pipes, blow-holes, segregation, etc. Based on recent statistics, the average plant investment plus working capital in American steel plants is approximately $109 per ton of annual finished capacity. Hence, when the proper charges are made for interest, depreciation and obsolescence of these investments, a substantial charge per ton of finished capacity is made necessary.

Then, too, many steel plants, because of the nature of their manufacturing processes, necessarily have been built for large capacity in

A NEW commercial steel product, only the second to be introduced in 48 years, made by a revolutionary process which bypasses orthodox methods and permits production to go to centers of large consumption—that's news. This new product and process are described for the first time in the accompanying authorized article by John D. Knox, associate editor of STEEL.



POURING a 1½-ton annular bloom, 6 x 6 inches cross section and 10 feet diameter. The casting machine, installed below floor level for safety purposes, is rotated rapidly by a small horsepower motor, thus supplying heavy continuous centrifugal pressure to the metal through the cycle of solidification



ONE CAST EQUALS MANY ROLLINGS: When the steel has solidified and is still at a high temperature, the molds are removed from the machine and the ring stripped. The rotary method of casting affords a yield of homogeneous blooms of about 98 per cent

order to effect the proper economies. Few plants have been located for the sole purpose of securing low transportation charges on raw materials or on the delivery of finished products to consuming centers, and hence, large annual transportation charges have resulted.

Four possibilities, therefore, existed for improving certain steps in the manufacture of steel. First, a reduction of the losses involved in the conversion of molten steel into semi-finished products, second, a reduction of the investment charges per ton of annual output; third, a more advantageous location of the steel-making plant in relation to the ultimate consumer, or to the supply of raw materials; and, fourth an opportunity for improving the quality of "ordinary" steel and making it of the cleanliness and homogeneity of the so-called higher grades.

A consideration of these factors and the outcome of preliminary experiments invited an investigation of the process of rotary casting of steel in a substantial way. While the principle of employing centrifugal force in the casting of molten metal is not new, its application on a volume basis has been confined largely to the manufacture of cast iron pipe.

The inherent character of the steel industry, requiring volume production as it does, naturally caused Messrs. Naugle and Townsend to concentrate on the application of the rotary principle through means which would lend themselves to volume production. Their aim was to evolve a process which would have all of the advantages of the application of centrifugal force and none of the limita-

(*Please turn to Page* 26)

Sustains Rustless Iron Corp. Process

ON MARCH 1 Judge William C. Coleman, of the United States district court at Baltimore, rendered a decision against the American Stainless Steel Co. and the Electro Metallurgical Co. in their suit against Rustless Iron Corp. of America for alleged infringement of patents.

The suit was filed in May, 1929, on certain patents owned by American Stainless Steel Co., and the Electro Metallurgical Co. was subsequently brought in as an additional party plaintiff.

In rendering his decision Judge Coleman declared that certain claims of the patents in suit are invalid.

The process alleged by the American Stainless Steel Co. to constitute an infringement of its patents is one in which chromium is introduced into the steel directly from chromium-bearing ore, as distinguished from the commonly practiced method of introducing the chromium in the form of an alloy of iron and chromium.

An appeal was filed last week in the case.

February Ingot Rate Highest in 10 Months

OPEN-HEARTH and bessemer steel ingot production in February crossed 20 per cent, on the way up for the first time since April, 1932. On a daily basis the February ingot average was 44,378 gross tons, compared with 38,704 tons in January and 58,308 tons in February, 1932. Owing to the short month, the February total was only 1,065,080 tons, against 1,006,297 in January and 1,457,710 tons last February. The two-month total for 1933 was 2,071,377 tons and the average operations 19.03 per cent, contrasted with 2,917,160 tons and 26.45 per cent a year ago. These statistics are by the American Iron and Steel institute, New York.

Steel Ingot Production — 1932-33

95.33 Per Cent of Industry Reporting
Gross Tons

1932	Open-hearth	Bessemer	Monthly output companies reporting	Calculated monthly output all companies	No. of working days	Approximate daily output all companies	Per cent operation
Jan.	1,230,661	160,633	1,391,294	1,459,450	26	56,133	25.96
Feb.	1,232,568	157,067	1,389,635	1,457,710	25	58,308	26.96
2 Mo.	2,463,229	317,700	2,780,929	2,917,160	51	57,199	26.45
Mar.	1,149,307	193,944	1,343,251	1,409,054	27	52,187	24.13
Apr.	1,036,227	144,197	1,180,424	1,238,250	26	47,625	22.02
May	950,785	103,593	1,054,378	1,106,030	26	42,540	19.67
June	755,123	100,249	855,372	897,275	26	34,511	15.96
July	652,650	102,872	755,522	792,533	25	31,701	14.66
Aug.	696,206	97,323	793,529	832,402	27	30,830	14.26
Sept.	804,556	124,970	929,526	975,061	26	37,502	17.34
Oct.	885,773	132,876	1,018,649	1,068,550	26	41,098	19.00
Nov.	838,559	128,844	967,403	1,014,794	26	39,031	18.05
Dec.	722,522	82,652	805,174	844,618	26	32,485	15.02
Total	10,954,937	1,529,220	12,484,157	13,095,727	312	41,973	19.41
1933							
Jan.	850,303	109,000	959,303	1,006,297	26	38,704	17.78
Feb.	888,560	126,781	1,015,341	1,065,080	24	44,378	20.39
2 Mo.	1,738,863	235,781	1,974,644	2,071,377	50	41,428	19.03

Figures exclude crucible and electric ingots. Operating percentages are based on 67,473,630 tons annual capacity as of Dec. 31, 1931.

Inflation Talk Grows, a Few Feelers Out; See Prices Rise

CHICAGO—A few inquiries for large-lot and long-term contracts for iron and steel have been received, possibly the first feelers based on anticipation of price inflation.

Some producing executives believe prices will rise over the remainder of the year, despite the fact consumption recently has been extremely low. For one thing, inventories are so light that building up stocks to normal would result in considerable business and help support advances.

There is open talk that, although sheet prices were adjusted only two weeks ago and second quarter books are open, a rise may be ordered next month. The facility with which consumers protect themselves at present levels will provide an indication of their views. One large pig iron interest predicts an advance of $5 a ton before the end of the year.

The handicaps to trading the past week have been lighter than anticipated. Railroads have waived demurrage and extended credit or accepted checks for freight charges. Expectation of early releases from restrictions appears near fulfillment.

Importers Are Stymied

PHILADELPHIA—Uncertainty over value of the dollar abroad is temporarily making it impossible for importers of pig iron, chrome and other ores, ferromanganese and other ferroalloys to do any business except to sell material in stock here.

Developments at the end of last week put this district in the most cheerful and optimistic mood since early last fall. It is believed that business will emerge from the present crisis with confidence restored, and that this will mark the beginning of a business revival.

During the banking holiday, bookings of steel products in eastern Pennsylvania declined 15 to 20 per cent, which is less than some producers had estimated. Some consuming plants in this territory shut down temporarily, the principal one being the Edward G. Budd Mfg. Co., due to a holdup on automobile body requirements.

All companies, producing and consuming, are attempting to pay nothing more than payrolls and are deferring the payment of bills until the banking situation has fully clarified, which seems probable this week. In the meantime, steel companies have continued to supply customers as the latter require materials, but keen scrutiny has been given to the credit status of all customers.

Look for Lift in Scrap

PITTSBURGH—Inflation is a subject now widely discussed, but the iron and steel markets fail to disclose any definite effort of either producers or consumers to protect themselves from its effects.

Second quarter books on most products have been opened, but if increasing talk of buying in anticipation of an advance materializes, the withdrawal of prices will follow. Unconfirmed reports were current Friday of a new schedule on bars, plates and shapes.

Scrap brokers at mid-week were skeptical, but by the end of the week sentiment was preponderant that as soon as "the lid is off" the market would shoot upward. There were advance notices of this when railroad lists brought higher bids and a small sale of a choice open-hearth grade was made at a slightly higher price.

Neither pig iron brokers nor blast furnace interests report any feelers for large tonnages.

A week ago it appeared that the steel operating rate by March 11 would be no higher than 10 per cent, yet the week closed with a drop of only a point from the 15 per cent average before the holiday.

Test Pig Iron by Odor?

IT IS charging time at a blast furnace in Cleveland. The skip has hoisted iron ore, coke, limestone and scrap, but the round is not yet complete. From a nearby odoriferous stock bin comes a scale car laden with garbage and rubbish. Up the incline go potato peelings, bones, grease, tin cans, ashes, old shoes—a diet sufficient to give even a hardy blast furnace indigestion, but saving the city of Cleveland the millions required for the construction of an incinerating plant. That is, if an idea credited to the mayor of Cleveland goes over.

Accept Checks for Freight

NEW YORK—Few suspension of steel shipments and practically no cancellations of orders followed the national banking holiday in this territory. Railroads carrying the bulk of shipments into this territory accepted checks during the emergency from well rated patrons and waived demurrage charges.

Sellers of steel as a rule scanned more closely the credit position of those buying, but in few instances only withheld shipments. Demand already was at a low point when the drastic action was taken at Washington.

In the scrap market a general tightening of the position of primary sellers followed and some dealers with substantial export business are reported short and find difficulty in accumulating supply. No trend toward heavier inquiry developed from domestic sources.

Some scrap dealers anticipated a rise in view of the fact that payments on export business are generally in gold dollars, this coupled with the anticipated mild inflation.

Pig iron business slumped to a few cars of much needed material. No expansion in demand is noted.

Frames Program for Scrap

New York—Benjamin Schwartz, director-general of the Institute of Scrap Iron and Steel Inc., is expected this week to present to directors of the institute proposals intended to meet the critical conditions facing the scrap industry. These proposals will cover the handling of credit, taxation and miscellaneous merchandising problems.

Steel Bookings Decline 44,444 Tons, 2.3 Per Cent

Unfilled tonnage of the United States Steel Corp. as of Feb. 28 was 1,854,200 tons, a loss of 44,444 tons from 1,898,644 tons as of Jan. 31. This decline is 2.32 per cent. The decline from December to January was 69,495 tons, or 3.5 per cent.

The end-of-February total of 1,854,200 tons—a new all time low—compares with 1,968,140 tons as of Dec. 31, 1932, and 2,545,629 tons as of Feb. 29, 1932.

To Show $5000 Steel House

Insulated Steel Inc., Cleveland, will build a steel house to sell complete for $5000 for the Chicago century of progress exposition. The structure will contain seven rooms, two baths, attached garage, heater room, roof garden and solarium. The house will be of the frameless type of welded steel construction with an exterior of enameled steel shingles. It will be one of several to be built for the fair, demonstrating the latest development in modern home building practice.

Price Structure for Steel Castings Nears Reality

THE long cherished dream of foundrymen that sometime they would be able to price castings on a systematic basis now seems to be approaching fulfillment. Classifications developed from recent experience in the steel foundry industry make possible for the first time a pricing system which takes into account the size, number of pieces, analysis, character of pattern, intricacy of cores, etc.

These classifications are the natural result of a long period of development in the merchandising of steel castings. Twenty years ago few foundry operators had the necessary facilities for quoting prices intelligently. As late as 1914 it was reported that "while an earnest effort is being made to quote intelligently on new work, it cannot be denied that the practice of guessing at the selling price of castings is still too prevalent for comfort."

Since that time much progress has been made in foundry cost accounting. Specialization in foundry work has led to the classification of certain types of castings into groups which has helped in a measure to break down the one-time belief among laymen that all castings are alike and that they can be priced on weight alone. The majority of foundrymen also have improved their methods of estimating jobs. Much of the old-time guesswork has been eliminated.

In the steel casting industry, these advances in cost accounting, classification and estimating furnish a groundwork for the erection of pricing structures. The accompanying compilation of prices, which has been developed by STEEL in co-operation with *The Foundry* and *Daily Metal Trade*, reflects the prevailing market quotations for ordinary types of castings made to generally accepted specifications. While the prices presented herewith indicate approximately the levels at which various types of steel castings are being quoted currently, the primary purpose of publishing them at this time is to establish definite classifications; to show the graduations in price necessitated by factors of size, quantity, character of pattern, analysis, etc.; and to pave the way for establishing in the future a complete schedule of base prices, from which fixed base foundrymen could issue quotations in the form of discounts, differentials, etc.

Under such a plan, if it should materialize, a classification similar to that presented here would be established with all prices at a predetermined par. For instance, average prices as of some particular period, say 1914 or 1924, might be adopted as the base. Current prices then would be quoted in terms of a discount of 25 per cent off or 28 per cent off. By this method the basic price structure, with all of its carefully compiled relationships, would remain fixed, but fluctuations in the cost of labor, pig iron, scrap, etc. could be reflected in the up or down variations in the flexible discount. This, of course, is mere speculation as to a possible, further logical development of the pricing system.

In the meantime the accompanying classifications constitute a major stride forward in the evolution of a practical price structure. They cover several important classes of steel castings, including those for rolling mills, steelworks and blast furnaces; bridges; boilers, tanks, flanged valves and fittings; flat companion type flanges; hydraulic press machinery; barges, and ships. Classifications covering steel castings for other applications probably will be developed later.

ROLLING MILLS, STEELWORKS, BLAST FURNACES

Miscellaneous Rolling Mill, Steelworks and Blast Furnace Castings, Ingot and Charging Car Bodies:

(*Not otherwise specified in this list*)

Weight in Pounds	Per Lb.
1 to 10	15.53c
Over 10 to 25	14.30c
Over 25 to 50	9.60c
Over 50 to 100	7.45c
Over 100 to 250	6.55c
Over 250 to 500	5.95c
Over 500 to 1000	5.20c
Over 1000 to 2500	4.75c
Over 2500 to 5000	4.55c
Over 5000	4.35c

Add 20% to above prices for all castings with water circulating pipes; hollow and disk table rollers and cylinders; rolling mill guides and table girders.

Add ¼c per lb. for carbon .40 to .70.

Extra charge for carbon above .70, and for alloys, depending on analysis.

Add ¼c per lb. when chemical or physical tests are required.

Above prices to apply for charging box heads and ends; also hearth jackets and bosh plates.

Coupling Boxes, Spindles, Roll Housings, Pinion Housings, Drop Balls, Hammer Rams and Hammer Dies:

Weight in Pounds	Per Lb.
25 to 50	8.65c
Over 50 to 100	6.50c
Over 100 to 250	5.45c
Over 250 to 500	4.80c
Over 500 to 1000	4.20c
Over 1000 to 2500	4.15c
Over 2500 to 5000	4.10c
Over 5000 to 10000	4.05c
Over 10000 to 50000	3.95c
Over 50000	4.20c

Add 25% to above prices for hollow spindles.

Add ¼c per lb. for carbon .40 to .70.

Extra charge for carbon above .70, and for alloys, depending on analysis.

Add ¼c per lb. when chemical or physical tests are required.

Gears, Gear Blanks, Gear Segments, Racks and Pinions, and Crane Castings, Not Shown Elsewhere:

Weight in Pounds	Per Lb.
1 to 10	15.75c
Over 10 to 25	13.65c
Over 25 to 50	10.50c
Over 50 to 100	8.30c
Over 100 to 250	7.60c
Over 250 to 500	6.35c
Over 500 to 1000	5.75c
Over 1000 to 2500	5.30c
Over 2500 to 5000	5.10c
Over 5000	4.75c

Add 20% to above for worms, worm wheels, sprockets, sheaves and pulleys.

Additional charge will be made for machine molded gears.

Railway motor gears not included in above schedule.

Add ¼c per lb. for carbon .40 to .70.

Extra charge for carbon above .70, and for alloys, depending on analysis.

Add ¼c per lb. when chemical or physical tests are required.

Special prices will be quoted on brakewheels for cranes, bumper hoods, center stems, charging bar supports, charging rams, clutch castings, clutch rings, drums, drum gears, end carriages, gear clutch jaws, gear covers, guide brackets, hollow shafts and stems, long hollow racks, machinery girt castings, motor supports, peels and peel heads, ram frames, sheave guards, stripper rams and sleeves, trolley sides, truck castings and all other intricate crane castings.

Annealing Pots:

Weight in Pounds	Per Lb.
500 to 1000	6.00c
Over 1000 to 2500	5.75c
Over 2500 to 5000	5.40c
Over 5000	5.15c

Annealing Boxes:

1000 to 2500	5.90c
Over 2500 to 5000	5.65c
Over 5000 to 10000	5.40c
Over 10000 to 50000	5.15c

Annealing Bottoms:

1000 to 2500	4.05c
Over 2500 to 5000	3.95c
Over 5000 to 10000	3.80c
Over 10000	3.60c

Charging Boxes:

	Per Lb.
All weights	4.75c

Add ½c per pound extra for double head boxes.

For charging box heads and ends, use miscellaneous schedule.

Blast Furnace Bells:

Weight in Pounds	Per Lb.
2500 to 5000	5.75c
Over 5000 to 10000	5.50c
Over 10000	5.25c

Slag Pots, Cinder Pots and Hot Metal Ladles:

2500 to 5000	5.00c
Over 5000 to 10000	4.80c
Over 10000	4.60c

Hoppers, Hopper Extensions and Tuyere Jackets:

500 to 1000	5.75c
Over 1000 to 2500	5.50c
Over 2500 to 5000	5.25c
Over 5000 to 10000	5.00c

Over 10000	4.90c

Add ½c per pound extra for hoppers cast in one piece.

Add 35% to above prices for blast hoods, blast hood tops and bosh supporting segments.

Valve Bodies, Tuyere Stocks, Pipes, Nozzles, Saddles, Rings and Lip Rings:

Pounds	Per Lb.
50 to 100	9.45c
Over 100 to 250	8.60c
Over 250 to 500	7.60c
Over 500 to 1000	6.45c
Over 1000	5.75c

FOR INDUSTRIALS ONLY

Physical Properties:

	Specification A	Specification B
Yield point, lbs.	55,000	60,000
Tensile strength, lbs.	85,000	90,000
Elongation, %	22	25
Reduction of area, %	40	50
Extra, per 100 lbs.	$1.50	$2.50

Freight Allowance:

The prices are for steel castings, not machined, f.o.b. foundry, with published rate of freight allowed to the freight station nearest purchaser's works, within these boundary lines:

All points in United States included within the line from Boston through Schenectady, Rochester, Niagara Falls, Toledo, Ohio-Indiana state line, Cincinnati, Newport, Ashland, Ky., Huntington, Charleston, Washington, Cape May, N. J., and all Atlantic ocean terminal points between Cape May and Boston.

Suitable pattern equipment is to be furnished by the purchaser, f.o.b. foundry.

Terms:

Cash settlements shall be made before the 25th of each month for all material shipped during the preceding month.

Note: Castings proving defective in workmanship or material and rejected, will be replaced under the same terms and conditions as orginally furnished. No claims for damages, labor or other expense on material furnished, will be allowed unless authorized in writing. All agreements contingent upon strikes, accidents or other causes beyond our control. No liability will be assumed for any special, indirect or consequential damages whatsoever.

HYDRAULIC PRESS CASTINGS

Weight in Pounds	1-9 Pieces	10 Pieces and over
1 to 5	20.00c	19.00c
Over 5 to 10	17.00c	16.00c
Over 10 to 25	15.00c	14.00c
Over 25 to 50	12.50c	10.00c
Over 50 to 100	9.50c	8.50c
Over 100 to 250	7.00c	6.60c
Over 250 to 500	6.50c	6.00c
Over 500 to 1000	5.20c	5.00c
Over 1000 to 2500	4.75c	4.60c
Over 2500 to 5000	4.55c	4.45c
Over 5000	4.35c	.....

For Specification "A" add 1.50c per lb.
For Specification "B" add 2.50c per lb.

BRIDGE CASTINGS

Bridge Blocks, Bases and Shoes:

Pounds	Per Lb.
Up to 500	5.00c
Over 500 to 1000	4.75c
Over 1000 to 2500	4.50c
Over 2500	4.00c

For Gear Castings for Bridges Only:

Pounds	Per Lb.
1 to 10	15.75c
Over 10 to 25	13.65c
Over 25 to 50	10.50c
Over 50 to 100	8.30c
Over 100 to 250	7.60c
Over 250 to 500	6.35c
Over 500 to 1000	5.75c
Over 1000 to 2500	5.30c
Over 2500 to 5000	5.10c
Over 5000	4.75c

Other Bridge Castings:

Pounds	Per Lb.
1 to 10	15.55c
Over 10 to 25	14.30c
Over 25 to 50	9.60c
Over 50 to 100	7.45c
Over 100 to 250	6.55c
Over 250 to 500	5.95c
Over 500 to 1000	5.20c
Over 1000 to 2500	4.75c
Over 2500 to 5000	4.55c
Over 5000	4.35c

A separate price to be quoted for patterns and a separate price to be quoted for machining.

For corrosion resisting castings—special extra prices to be quoted.

For Specification "A" add 1.50c per lb.
For Specification "B" add 2.50c per lb.

BOILERS, TANKS, VALVES AND FITTINGS

Castings for Boilers, Tanks, Flanged Valves and Flanged Fittings:

Working Pressure Castings

Weight in Pounds	1-9 Pieces	10-24 Pieces	25-49 Pieces	50-99 Pieces	100 Pieces and Over
1 to 5	22.50c	21.50c	19.50c	18.00c	16.50c
Over 5 to 10	19.50c	18.50c	16.50c	15.00c	13.50c
Over 10 to 25	17.50c	16.50c	14.50c	12.50c	11.50c
Over 25 to 50	15.00c	12.50c	11.00c	10.25c	9.50c
Over 50 to 100	12.00c	11.00c	10.00c	9.00c	8.50c
Over 100 to 250	9.50c	9.10c	8.75c	8.50c	8.25c
Over 250 to 500	9.00c	8.50c	7.95c	7.85c	7.75c
Over 500 to 1000	8.45c	7.70c	7.50c	7.35c	7.25c
Over 1000 to 2500	8.00c	7.25c	7.10c	7.00c	6.95c
Over 2500 to 5000	7.80c	7.05c	6.95c	6.85c	6.80c
Over 5000	7.60c	6.85c	6.75c	6.70c	6.65c

Special prices to be quoted for sinuous headers, water walls, screwed valves and fittings, mud drums and heat exchangers.

Specification "A" add 1.50c per lb. For Specification "B" add 2.50c per lb.

FLANGES

Flat Companion Type Flanges; Plain and Angle or "L" Section Flanges:

Weight in Pounds	1-9 Pieces	10-24 Pieces	25 Pieces and Over
1 to 10	14.55c	14.05c	13.55c
Over 10 to 25	13.30c	12.80c	12.30c
Over 25 to 50	8.60c	8.10c	7.60c
Over 50 to 100	7.50c	7.00c	6.50c
Over 100 to 250	7.00c	6.25c	5.50c
Over 250 to 500	6.40c	5.65c	5.00c
Over 500	6.00c	5.25c	4.60c

Over 7 ft. in diam.—special prices.

For Spec. "A" add 1.50c per lb.

For Spec. "B" add 2.50c per lb.

For corrosion and heat resisting castings—special extra prices.

Suitable pattern equipment to be furnished by customer.

SHIP CASTINGS

Weight in Pounds	1-9 Pieces	10-24 Pieces	25-49 Pieces	50-99 Pieces	100 Pieces and Over
1 to 5	20.00c	19.00c	17.00c	15.50c	14.00c
Over 5 to 10	17.00c	16.00c	14.00c	12.50c	11.00c
Over 10 to 25	15.00c	14.00c	12.00c	10.00c	9.00c
Over 25 to 50	12.50c	10.00c	8.50c	7.75c	7.00c
Over 50 to 100	9.50c	8.50c	7.50c	6.50c	6.00c
Over 100 to 250	8.00c	7.60c	7.25c	.....	.....
Over 250 to 500	7.50c	7.00c	6.45c	.....	.....
Over 500 to 1000	6.20c	.....	.....	.....	.....
Over 1000 to 2500	5.75c	.....	.....	.....	.....
Over 2500 to 5000	5.55c	.....	.....	.....	.....
Over 5000	5.35c	.....	.....	.....	.....

Note: The above prices include all ship castings *except* rudders, rudder posts, rudder frames, spectable frames, struts, stern frames, stems, quadrants and hawse pipe. Special price to apply to these castings.

Note: Propeller wheels—use first column only—add 2c per pound.

Specification "A" add 1.50c per lb. For Specification "B" add 2.50c per lb.

All Inspection fees paid by purchaser.

BARGE CASTINGS

Barge Castings Only:

Weight in Pounds	Miscellaneous Castings 1-9 Pieces	10-49 Pieces	50 Pieces and Over
10 to 25	15.55c	14.55c	13.55c
Over 25 to 50	9.60c	9.00c	8.60c
Over 50 to 100	7.45c	6.85c	6.50c
Over 100 to 250	6.55c	6.00c	5.75c
Over 250 to 500	5.95c	5.35c	5.25c
Over 500 to 1000	5.20c	5.10c	5.00c
Over 1000 to 2500	4.75c	4.60c	4.50c
Over 2500 to 5000	4.55c	4.45c	.....
Over 5000	4.35c	.....	.....

Barge Double and Single Bitts, Kevels and Chocks:

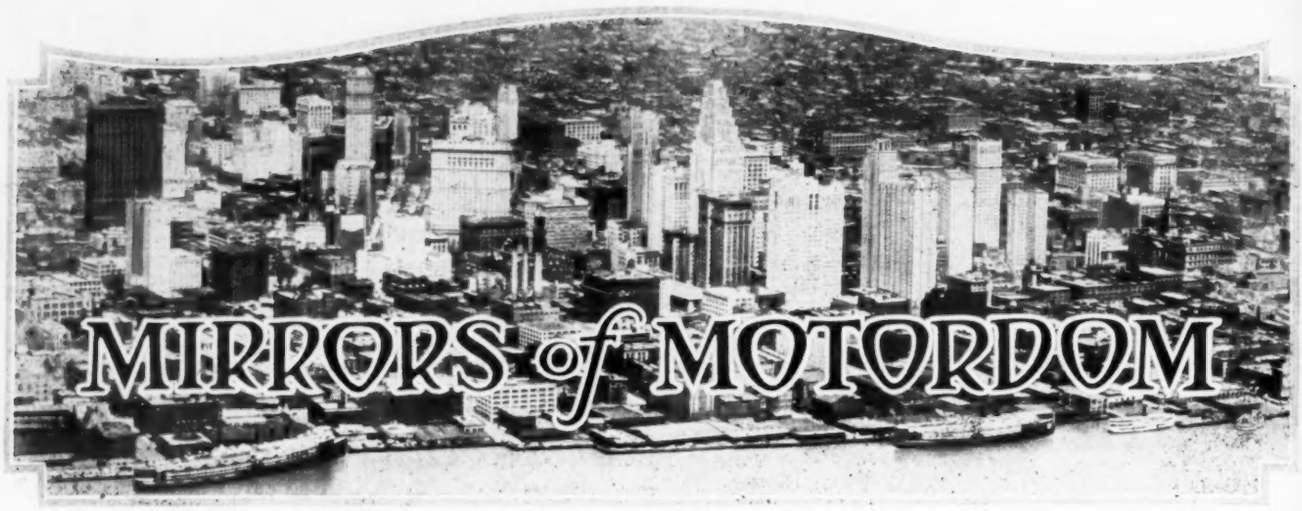
Weight in Pounds	1-9 Pieces	10-50 Pieces	51 Pieces and Over
25 to 50	6.00c	5.35c	5.15c
Over 50 to 100	5.75c	5.15c	4.90c
Over 100 to 250	5.50c	4.90c	4.75c
Over 250	5.00c	4.75c	4.50c

Barge Corner Castings, Hatch Frames and Covers:

Weight in Pounds	1-9 Pieces	10-50 Pieces	51 Pieces and Over
25 to 50	8.50c	7.75c	7.25c
Over 50 to 100	7.50c	6.75c	6.25c
Over 100	6.50c	5.75c	5.25c

All Inspection fees paid by purchaser.

For Spec. "A" add 1.50c per lb.; for Spec. "B" add 2.50c per lb.



DETROIT

PROBABLY more than any other large city, Detroit stands to benefit from the forceful action being taken at Washington to reopen banks and increase the supply of currency; hence the first indications in six weeks of anything approaching enthusiasm.

A break in the bank blockade, which was proving insolvable, now appears possible. An expansion of currency is appraised as a basic step toward restoration of confidence.

While there has been no undue emphasis upon the word inflation, some measure of it is believed both inevitable and desirable, with the automobile industry a leading beneficiary.

There is no "foolish optimism," ample recognition with the President that "arduous days" are ahead, and sober appreciation that Detroit has more to work out of than most cities, yet the surface need be scratched only lightly to uncover the opinion that demand for automobiles will snap back fast.

Hope to Resume Comeback

More than is generally realized, the automobile industry was coming back strongly when labor difficulties began sniping at it late in January and the breakdown of banking crippled it the middle of February.

From the low of the depression—49,000 units in October—production rose to 60,000 in November to 107,000 in December to 130,000 in January. Despite its handicaps, February probably turned in a total of over 100,000.

Of an enormous dammed-up replacement market, the automobile industry is certain. Chevrolet sales in late December and January, on the thin crust of a financial catastrophe, are a hint of the possibilities. Positive assurance that the country has seen the worst and that major developments will be on the up side will release substantial buying, the industry believes.

Inflation is a secondary consideration at this time, but its potentialities are being widely discussed. If there is any tendency toward translating cash into tangibles, Detroit can conceive of nothing more attractive than a streamlined 1933 model automobile. Also, Detroit knows human nature sufficiently to realize the reaction to a period of repressed buying.

Local Situation Is Muddled

But whatever the degree and speed of recovery—and many here have mental reservations that railroad freight and wage rates cannot escape liquidation—it requires a bifocal mind to distinguish between the hopes that have been raised and the realities of the moment. In fact, the local situation has been so low that the rebound following good news from Washington is the greater.

Prior to the convening of congress and the passage of remedial legislation last week, discouragement here was fast turning into resentment. Come Tuesday, it will be a month since the banks closed, with all deposits except the original dole of 5 per cent still frozen solidly. Issuance of $27,000,000 in scrip beginning Monday will have the indirect effect of releasing another 5 per cent.

So diverse are the elements comprising the local banking group and so deep-seated is the difficulty that all programs, including that of the Fords, had failed. Incidentally, the hope that Henry Ford somehow will cut the Gordian knot, at the same time releasing $60,500,000 he has on deposit here, is widely entertained.

Local credit and emergency accommodations, while operating surprisingly well, had reached their elastic limit. The shortage of working capital was progressively paralyzing the district, especially affecting the smaller partsmakers and accentuating the shutdowns directly due to the precipitate decline in retail automobile sales.

The middle of last week Ternstedt, Continental Motors, Wilson Foundry & Machine, Federal Motor Truck and the gear, axle and forge divisions of Chevrolet—to cite five typical companies—went down. Some manufacturers who were out of production last week were tentatively scheduled to resume Monday; others went down for an indefinite period.

Chevrolet intensified the situation when it notified all of its supply interests that beginning Monday of this week it would be down tight in all departments. It is understood that factory production has outrun retail sales considerably the past few days, that dealers are well stocked, and assembling will not be resumed until retail sales improve.

As a logical sequence, releases for material, including iron and steel, dwindled to a mere trickle last week and the aggregate was the lightest for any week since early last fall. This was due almost entirely to the consumptive situation, as neither producers nor the railroads have stood on ceremony so far as accommodating approved credit ratings is concerned.

Outside Recovery To Be a Spur

With decisive action at Washington, sentiment lightened appreciably over the weekend. The application of the federal formula, it is believed, will thaw a portion of the frozen assets of banks this week. The revival of confidence in other districts may work back into this district before all of the local difficulties have been solved, and perhaps may accelerate relief.

Last week and early this week may appear in retrospect to be the low

point of the financial holdup. In event automobile manufacturers over the next few days glimpse indications of an improved spring market, a resumption of releases of material for late March and early April delivery may be at hand. Every indicator will be watched this week for signs of a definite upward trend.

At the moment, production schedules are so disarranged as to be meaningless, and the March total will be under 100,000 units. There are, however, two bright spots, comparatively speaking. Dodge is operating at a rate which justifies the forecast it will show the heaviest gain for any Chrysler line this year, while Ford has achieved a rate of 1000 assemblies, five days a week. Holdups from Ford and Dodge have been fewer than from other manufacturers.

Chevrolet, which dropped to 45,000 units in February, will be below this mark in March. Whether advance knowledge of the banking crisis last week would have resulted in further postponement of introduction of its low-price "standard six" is, of course, not known, but Chevrolet is going through with its debut. This is the car referred to as the Mercury in recent months.

New Chevrolet Business Car

The car is neither so small nor so low in price as generally expected, with a 107-inch chassis, an engine slightly smaller than the larger Chevrolet, and both engine and chassis well stripped of gadgets. It will be pushed especially for business purposes. The sales campaign at the outset will be largely conducted in newspapers.

The experience of General Motors with companion cars may have dictated the application of the name Chevrolet to both lines. Marquette did not survive as a companion to Buick, nor Viking to Olds. Pontiac eventually supplanted the Oakland which was the senior to it. LaSalle, of course, has continued as the running mate of Cadillac.

R. C. Mahon Co., Detroit, is fabricating 1250 tons of structural steel for the plant of the Rotary Electric Steel Co. (Michigan) in northeast Detroit. Here, electric furnace scrap will be converted into cold-drawn bars by a revolutionary process described in full beginning on page 11 of this issue . . . . A finished steel manufacturer recently renewed an option on a mill site just south of Detroit . . . . Three of the six open-hearth steel furnaces of the Great Lakes division of the National Steel Corp. were active last week . . . . Skinner Chuck Co., New Britain, Conn., is marketing a new type of piston ring, with strips of bronze antifriction bearing metal inserted in and around the circumferential face of a cast iron ring.

Business News Of Washington

AMERICAN IRON AND STEEL INSTITUTE has protested to customs bureau of the treasury department in connection with its recent action giving collectors permission not to withhold appraisement on iron and steel articles imported from abroad except from such countries as temporary dumping orders have been issued.

It is stated that protests also have been received from several individual iron and steel interests, but no action is anticipated at this time by the bureau. Pending reorganization of the bureau by the new administration, it is doubtful if any orders of importance will be promulgated except in an emergency.

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No date has yet been set by the tariff commission for a hearing in connection with its investigation of the cast iron pipe industry as the result of a senate resolution. In fact, the commission is now simply marking time to find out what the new administration wants it to do and how.

Domestic cost figures in the cast iron pipe industry have been obtained and these data are ready for the commission. No work has been done abroad on cost of production and it is probable that it will not be because of the expense involved. However, enough data are now in hand to present at a hearing when it is held.

The hearing on the cotton tie survey having been completed and all of the information having been collected, the report is ready for the commission for action. However, this also is being held up, pending the wishes of the administration.

Here and There In Industry

CALLAHAN CAN MACHINE CO. INC., 80 Richards street, Brooklyn, N. Y., has been formed to take over assets of Adriance Machine Works Inc., including trademarks, tradenames and goodwill. The latter was organized in 1888 and was incorporated in 1913. March 29,1932, a receiver was appointed who operated the plant for about eight months, when a sale was ordered. The company's production includes presses, dies, machinery for working sheet metal, automatic can machinery, machines for making crown caps and special machinery. A division, the Adriance bottle crowning machine division, was previously sold. The former Adriance lines will be continued in manufacture. T. E. Callahan is president and James B. Rohde secretary and treasurer of the new company.

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Republic Steel Corp., Youngstown, O., has moved its Boston district sales office to rooms 706-9 Consolidated building, 250 Stuart street, Boston.

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Youngstown Sheet & Tube Co. and Youngstown Steel Products Co., Youngstown, O., have moved their Boston sales office to the Consolidated building, 250 Stuart street.

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General-American Tank Car Corp., Chicago, will vote at its meeting in April on changing its name to the General American Transportation Corp., the more fully to connote its activity.

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National Association of Flat Rolled Steel Manufacturers has moved its offices, from the Terminal tower Cleveland, to the Frick building annex, Pittsburgh. A. N. Flora is now located in Pittsburgh.

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Euclid-Armington Corp., Euclid, Cleveland, has appointed F. J. Page, 407 South Dearborn street, Chicago, Chicago district manager in charge of crane and hoist sales in portions of Illinois, Indiana and Michigan tributary to Chicago.

Postpones Conference

Case School of Applied Science, Cleveland, has postponed the conference on "Re-Engineering for Economical Manufacture" which was scheduled for March 22-24. Present financial restrictions are given as the cause for the action.

It is expected that the conference will be held later with substantially the same program as announced in STEEL, Feb. 27, page 40.

Barge Steel to Nashville?

Consideration is being given proposed deepening of the Cumberland river for 200 miles to permit transportation of steel products from Pittsburgh to Nashville, Tenn. The Cumberland river enters the Ohio a short distance above Paducah, Ky. Chief of engineers at Washington says this plan would necessitate raising and repairing seven locks and dams at an estimated cost of $868,000.

Industrial Men in the Day's News

Theodore H. Harvey, President, Steel Founders' Society of America

HIS introduction to the steel casting industry was via the banking route, just prior to the World war.

AT present he is vice president in charge of sales of one of the important factors in the industry.

GOLF, fishing, hunting, football—these favorite diversions indicate a rugged, outdoor type of mind.

THEODORE H. HARVEY, who was recently elected president and director of the Steel Founders' Society of America, New York, is vice president in charge of sales of the Ohio Steel Foundry Co., Lima, O. This honor climaxes his 15 years of service to the Founders' society.

Born in Ashtabula county, Ohio, in 1888, Mr. Harvey was graduated from Oberlin college, Oberlin, O., in 1910. The following year he taught physics and chemistry and coached the football team of the Waukesha, Wis., high school. Then he became shop superintendent and later traveling salesman for a company manufacturing portable houses and camp furniture.

His next connection, with the First National Bank of Milwaukee, brought him into contact with the steel castings industry, when as representative of the bank he assisted in liquidating the Prime Mfg. Co., Milwaukee. The war greatly stimulating demand for steel castings, he assisted in the organization of the Pelton Steel Co., Milwaukee, in 1916, and until 1918 was general manager of that company.

In the latter year he became works manager of the Springfield, O., plant of the Ohio Steel Foundry Co., and since 1924 has been at headquarters of the company, at Lima, as vice president in charge of sales and recently also as secretary and treasurer.

On golf, fishing, hunting and football he is an enthusiast, never having "caught up" on any of them.

CHARLES A. MORROW, who has been vice president of the Youngstown Pressed Steel Co., Youngstown O., has been placed in charge of the company, following the granting of indefinite leaves of absence to W. W. Galbreath, president, and W. Gordon Armstrong, assistant to the president. The company is a subsidiary of the Sharon Steel Hoop Co., Sharon, Pa.

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George S. Conner, formerly with the New York sales office of the Allegheny Steel Co., Pittsburgh, has been appointed district manager at 229 East Thirty-seventh street, New York, for Platinel Inc., Albany, N. Y., manufacturer of stainless steel household, hotel and club equipment.

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Thomas A. Marsh, for ten years chief engineer of the Green Engineering Co., for seven years western manager for the Combustion Engineering Corp. and for three years president of the Modern Coal Burner Co., has become a partner in the Ernest E. Lee Co., Chicago, manufacturers' representative.

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James Henderson, deputy chairman and general manager of the Frodingham Iron & Steel Co. Ltd., has been elected president of the National Federation of Iron and Steel Manufacturers of Great Britain, for 1934. New vice presidents include: Sir John Beal, K.B.E., chairman of Messrs. British (Guest Keen Baldwins) Iron & Steel Co. Ltd.; Capt. R. S. Hilton, managing director of the United Steel Cos. Ltd.; Charles Mitchell, chairman of Messrs. Dorman, Long & Co. Ltd., and Ben Walmsley, C.B.E., director of Messrs. Dorman, Long & Co. Ltd.

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George A. Burke, vice president in charge of lubricating sales and a director of the Standard Oil Co. of Ohio, Cleveland, was recently honored by the Standard company for 45 years of continuous service. Mr. Burke is widely known in the steel industry as an authority on lubrication engineering, having served many of the largest steel companies.

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Kenneth Headlam-Morley, who in 1925 joined the staff of Dorman, Long & Co. Ltd. and has been in the secretarial, managing director's and by-products departments, has been appointed secretary of the Council of the British Iron and Steel institute. He will succeed G. C. Lloyd, who retires shortly after 30 years with the institute, about July 1.

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F. C. Kerns, superintendent of lubricating sales of the Texas Co., New York, has been elected a director of the fuel and ash group of the Exhibitors Committee Industrial &

Power Shows Inc., 330 West Forty-second street, New York. He succeeds E. J. Billings of the Babcock & Wilcox Co.

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E. R. Thompson, Tallulah, La., is president of the Delta Steel Foundry Inc., recently organized to operate a foundry for producing steel castings.

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H. B. Miller has been appointed Philadelphia district sales manager, Truscon Steel Co., succeeding Benjamin J. Sigmund, resigned.

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L. D. Shaw, purchasing agent, Houston Foundry & Machine Co., Houston, Tex., has been elected a director of the Houston Association of Purchasing Agents.

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H. C. Brewster, president, Brewster Iron Works Inc., Shreveport, La., is president of the National Alloy Metal Co., recently incorporated in that city.

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George K. Williams, designing engineer of metallurgical plants, Anaconda, Mont., will go to Nicosia, Cyprus, where he will join the staff of the Cyprus Mines Corp., at Skouriotissa.

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Chapin K. Morris has been transferred to Tulsa, Okla., as southwestern manager for Bradford Motor Works, Bradford, Pa. He is a son of George B. Morris, president of the company.

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George A. Ranney, vice president, International Harvester Co., Chicago, has been elected vice chairman of the Peoples Gas Light & Coke Co., Commonwealth Edison Co., and the Public Service Co. of Northern Illinois.

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Ericson H. Merritt has been elected a director of the Dittmer Gear & Mfg. Co., Lockport, N. Y. Other directors were re-elected, including Arthur H. Dittmer, Charles W. Christy, Reuben E. Hyatt, O. Neil Prudden and William F. Williams.

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Harold S. Strouse, treasurer of the Harnischfeger Corp., Milwaukee, was elected a member of the board of directors at the annual meeting. He became connected with the company originally as advertising manager. Walter Harnischfeger, president, and all other officers and directors were re-elected.

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Franklin Farrel Jr. has been re-elected chairman of the board of the Farrel-Birmingham Co. Inc., Ansonia, Conn., Nelson W. Pickering re-elected president, and all other officers continued with the exception of Alton Farrel who, as noted last week, retired as treasurer and director and was succeeded by Frederick M. Dew Jr.

Steel Loss in 1932 $12.33 Ton Ingots

COMPLETE reports for 1932 from integrated steel producers having an annual capacity of 59,292,000 tons, or 88 per cent of the country's capacity, indicate the 1932 net loss for the steel industry, after all charges but before any dividends, as $161,404,705. This averages $12.33 for every ton of open-hearth and bessemer steel ingots produced in 1932.

The identical companies indicate a total loss of $14,271,099 for 1931, or 57 cents per ton of ingots. These statistics supersede the preliminary estimate in STEEL for Feb. 20, page 9.

□ □ □

Youngstown Sheet & Tube Co. loss in the fourth quarter, after all charges, was $3,684,745, compared with $3,241,444 in the third quarter. The loss for 1932 totals $13,272,783, compared with $7,049,899 in 1931.

□ □ □

Colorado Fuel & Iron Co., Denver and Pueblo, Colo., reports net loss in 1932, after charges, of $4,253,261, against $3,363,206 in 1931. The operating profit in 1932 was $1,544,070. Depreciation alone almost offset this, being $1,314,074.

□ □ □

Otis Steel Co., Cleveland, loss in 1932 increased considerably over 1931, being $2,830,155, after all charges, compared with $1,571,342. Total assets at the end of 1932 were $34,165,332.

□ □ □

Ludlum Steel Co., Watervliet, N. Y., encountered net loss of $474,310 in 1932, contrasted with loss of $99,144 in 1931.

□ □ □

National Supply Co., Pittsburgh, is proposing a change in the par value of its common stock to $25 from $50.

□ □ □

Canada Wire & Cable Co. Ltd., Toronto, Ont., reports net operating loss of $283,666 in 1932, compared with a net operating profit of $291,173 in 1931.

Died:

FRANK HORSBURGH, 78, president, Horsburgh & Scott Co., Cleveland, March 4. A native of Scotland, Mr. Horsburgh went to Cleveland when 25. In 1888 he entered into partnership with Thomas Scott, doing business as general millwrights and machinists. When electric street cars were introduced, gears were manufactured. In 1898 Mr. Horsburgh bought Mr. Scott's interest and founded the present company. Mr. Horsburgh was a founder of the American Gear Manufacturers' association. Mrs. Horsburgh died soon after his funeral.

□ □ □

D. R. Mathias, 65, retired general superintendent of the Joliet, Ill., works of the Illinois Steel Co., at Joliet, March 4. For 40 years active in the steel industry and for 23 years at Joliet prior to his retirement Nov. 1, 1926, he was regarded as an authority. Starting at the North Chicago Rolling Mill Co. in 1886 as inspector he was promoted to superintendent in 1889, shortly afterward being made night superintendent at the South Chicago Works of the Illinois company, and in 1903 going to the Joliet works. He was interested in many charitable and civic enterprises of his home city.

□ □ □

D. A. Barkley, manager of sales of pig iron, coke and its by-products, stone and sand, Bethlehem Steel Co., at Bethlehem, Pa., March 3. In 1912 he became identified with the Lehigh Coke Co. and in 1917 went with Bethlehem when that company took over the Lehigh company. His illness was sudden and he had been active at work the day before his death.

□ □ □

Fred W. Buerstatte, 53, mechanical engineer for the Hofius Steel & Equipment Co., Seattle, Feb. 25.

□ □ □

Walter A. Kline, member of Jones Iron & Steel Co., Boston, at Natick, Mass., Feb. 20. For 38 of his 68 years he was a member of the firm.

□ □ □

Walter E. Dean, 68, founder and president, Dean Brass Foundry, Atlanta, Ga., March 2. Before founding his own business he was connected for many years with the Southern Agricultural Works.

□ □ □

Charles A. Young, 74, president, Young Bros. Co., Detroit, Feb. 17. When 24 he became superintendent of the Detroit Sheet Metal & Brass Co., resigning in 1896 to operate his own company in conjunction with his brother, George A. Young.

□ □ □

William J. Dunn Sr., former president and general manager of the Dunn Machinery Co., Atlanta, Ga., March 2. An authority on machinery for the farm and mill, he represented the Massillon Engine & Thresher Co., at Chattanooga, Tenn., for many years, and operated the Dunn company, in Atlanta, 28 years. He was 66.

□ □ □

John D. Thomas, retired superintendent of the Homestead Works of Carnegie Steel Co., at Wheeling, W. Va., March 3. He was superintendent of the Mingo Junction, O., plant of Carnegie before going to Homestead, where he was superintendent during the strike of 1892.

EDITORIAL

Fortuitous Timing of Crisis Will Facilitate Recovery

AT A TIME when important history is in the making, accurate appraisals of the significance of current momentous happenings are well nigh impossible. Time alone can provide the perspective required for balanced interpretation.

Meanwhile, we can obtain a reasonably satisfactory clue as to what to expect in the near future by considering the present situation in the light of past economic and political history in the United States.

Everyone is familiar with the economic cycles that have been represented by recurring waves of prosperity and depression, but the fact that similar cycles of political thought and action have prevailed is seldom given the attention it deserves. A representative form of government, such as ours, is susceptible to waves of public emotion which swing, like a pendulum, from one extreme of complacency and easy tolerance to another of dissatisfaction, critical scrutiny and discipline. These surges of public opinion are reflected in the policies of the administration of our government. Consequently, since the founding of the republic, we have witnessed a dozen or more political cycles, in each of which administrative, legislative and judiciary leniency has been followed by administrative, legislative and judiciary discipline.

Power of Finance and Industry Grows, Is Abused, Then Curbed in Recurring Cycles

A typical cycle occurred in the 12-year period from 1896 to 1908. President McKinley's first term was attended finally by general prosperity, the growth of large corporations and an accentuation of the power of high financial and industrial interests. Human nature being what it is, it was only natural that here and there flagrant abuses of privilege occurred. Thus the situation was made to order for President Theodore Roosevelt to wield the "big stick" over "big business" and to thereby endear himself to the public. The Rooseveltian curb on the excesses of business and finance continued throughout his administration, but the cycle ended shortly after the inauguration of President Taft, when a more conciliatory attitude toward business again was resumed.

Skipping over the administrations of Presidents Wilson and Harding, which were colored by war and postwar problems, we come to the period of Coolidge and Hoover. From March, 1925, to October, 1929, the country was outwardly prosperous. In 1928 and 1929 speculation rose to unprecedented heights. The whole world was money mad. Greed caused men to do things they should not have done.

Thus, on March 4, 1933, the cycle had swung around to the point where a national house cleaning again was inevitable. The stage is set for the wielding of the "big stick" by Franklin D. Roosevelt just as it was for Theodore Roosevelt 30 years ago. Restraint against Wall street excesses, restriction of speculative activity by banking institutions, leveling of the pyramids of intricate corporation organization, curbing of hectic promotion, and perhaps drastic checking of certain practices in business and industry may be expected. Franklin Roosevelt's inaugural blast against the "money changers" is no more drastic than Theodore Roosevelt's famous condemnation of "malefactors of great wealth."

Providential Circumstances Give President Clear-Cut Mandate for Prompt Action

However, the situation confronting President Roosevelt today differs in one important aspect from that faced by the President of the same name 30 years ago. By virtue of a timing that now seems almost providential, the bank crisis broke on the day of his inauguration, thus creating an emergency which automatically has given the new President a degree of public support and clothed him with powers seldom if ever granted a chief executive in time of peace.

This fortuitous circumstance is one of the most hopeful elements in the present crisis. It insures direct, forceful action that could not have been undertaken under any other conditions. It will simplify the gigantic work of reconstruction.

First will come provision for currency to facilitate the conduct of business—a task now well under way. Later will come relief, rehabilitation of jobs, expansion of business, etc., and concurrently with these emergency measures there will be evolved a new system of banking and improved practices in business and finance.

The road back to security will not be smooth. We do not know whether the pace will be fast or slow. But there is great satisfaction in the knowledge that at last most of the obstacles are in plain view and that the President has a clear-cut mandate to go ahead. Today we have true cause for sober optimism.

THE BUSINESS TREND

Business Optimistic After Shock of Bank Crisis

THROUGHOUT the past week speculation as to the immediate outcome of the financial situation has claimed the exclusive attention of industrial executives. Naturally the restrictions on bank operations made it difficult for some companies to meet payrolls, freight bills and some other obligations requiring prompt settlement. In some cases payment of wages was deferred, plant operations were curtailed and contemplated shipments were held back, but these measures were not adopted generally. In fact, considering the circumstances, industry has displayed a remarkable intent to "carry on" as usual.

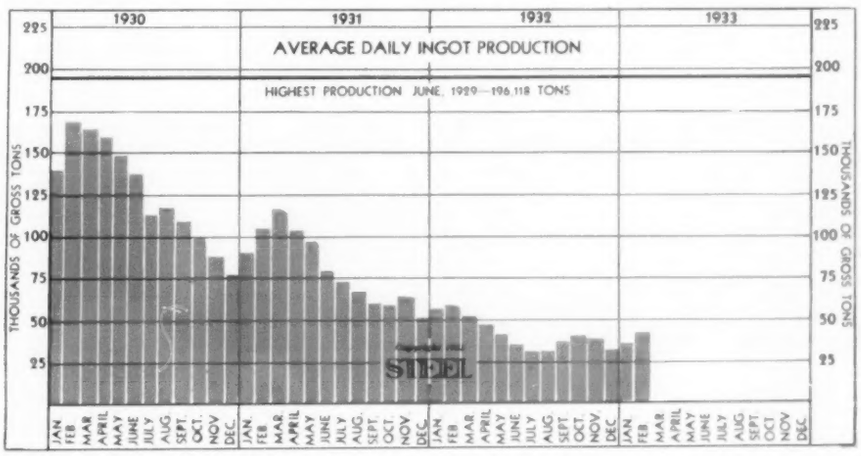
By midweek it was evident that prices of a number of commodities were being influenced by the money situation. The sensitive nonferrous metals firmed on Wednesday, with advances in lead, zinc, brass ingots and copper. Textile materials, platinum, diamonds and numerous food products were quoted at higher levels. In a few instances future protection on prices was withdrawn, indicating the expectancy of an early rise to higher levels.

Easing of money restrictions toward the end of the week, with the promise of new currency for national circulation and the announced determination of the new administration to force gold out into the open, assured the nation that the urgent need for facilities for transacting current business will be met promptly. Complete readjustment and reform of banking are for the future.

Major Banking Crises in United States Have Been of Short Duration

In the United States acute banking crises such as we now are experiencing, invariably have been of short duration. The usual aftermath is a rather prompt upturn in the stock market followed several months later by expansion in business. Whether or not this will be the case in the next few months is pure speculation. It would seem, however, that the fact the nation was liberally cleansed of boom-time inflation during three years of painful liquidation before the bank crisis occurred, may be justification for the belief that recovery from now on may be somewhat more rapid than in 1907, for instance, when the financial crisis was preceded by only a few months of liquidation.

At any rate, the nation is relieved to know that the financial situation has come to a head, that long hidden menaces now are in the open and that all the force of the republic is united for recovery.

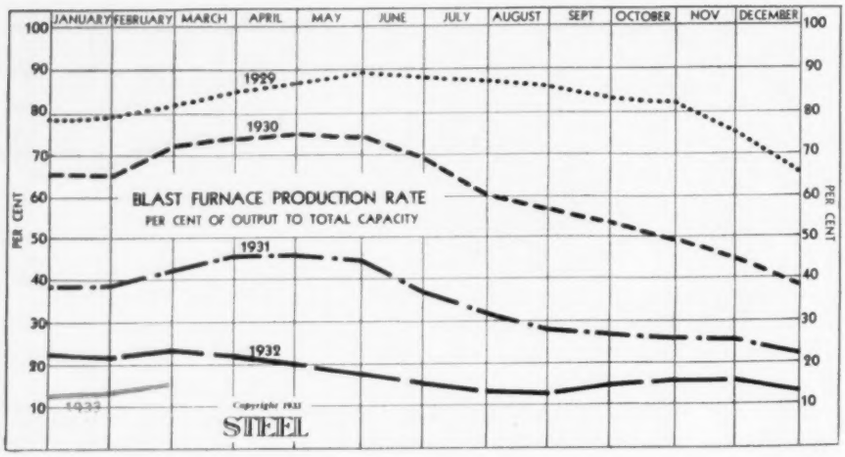


1933
Feb. 44,378
Jan. 38,704

1932
Dec. 32,485
Nov. 39,031

1932
Feb. 58,308
Jan. 56,133

1931
Dec. 50,047
Nov. 63,666



February, 1933	14.0
January, 1933	13.0
February, 1932	23.4

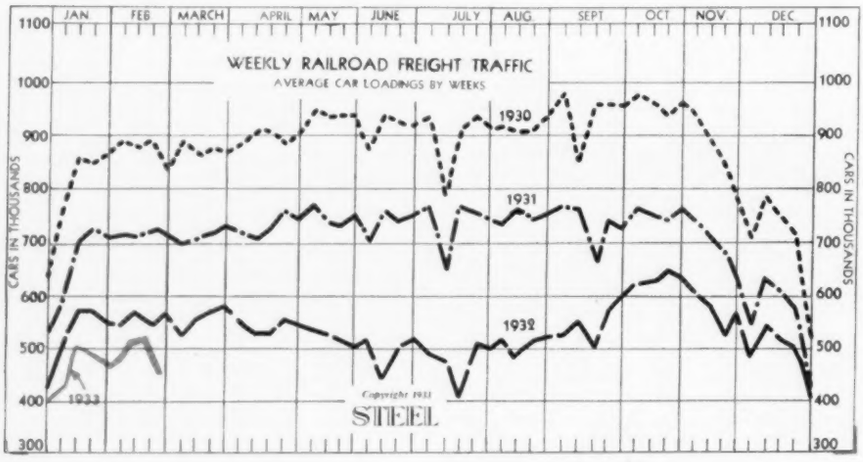
Five Stacks Blown in, Six Out, in Second Month

Although the daily output of pig iron in February continued upward, the number of active stacks turned downward from 45 on Jan. 31 to 44 on Feb. 28. Relating production to capacity, the operating rate for February was 14.0 per cent, a gain of one point from the 13.0 per cent of January. Operations in December were 12.5 per cent and in November 14.7 per cent. In February, five furnaces became active and six went out of blast, making a net loss of one stack.

Pig Iron Output Continued Upward in February

The average daily production of coke pig iron in February continued the increase which began in January. Average daily output in February was 19,752 gross tons which, compared with the 18,348-ton rate of the preceding month, was a gain of 1404 tons or 7.6 per cent. The February average is the highest since last November. Daily output in February last year was 33,122 tons while production for the same month in 1931 was 61,114 tons per day.

February, 1933	19,752
January, 1933	18,348
February, 1932	33,122



	1933	1932
Feb. 25	459,079	635,498
Feb. 18	514,390	572,265
Feb. 11	501,320	561,535

Car Loadings Decline in Last Week of February

Loading of revenue freight for the week ending Feb. 25 totaled 459,079 cars, according to the car service division of the American Railway association. This was a decrease of 55,311 cars below the preceding week due to observance of Washington's birthday and to bank restrictions. The total was also a reduction of 76,419 cars below the corresponding week in 1932. Losses were registered in the loading of all commodities, with the exception of grain products which gained 2269 cars over the preceding week.

Using Forged Plate Housings on 84-Inch Cold Mill

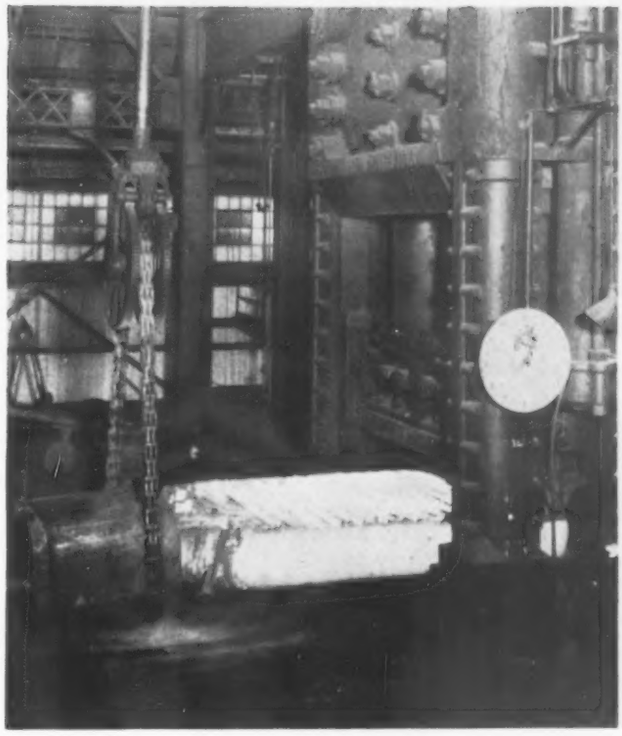


Fig. 1—Forging a slab into a 10-inch thick steel plate which will constitute one section of the laminated rolling mill housing

A STRIKING example of the possibilities of wrought steel for roll housings is being demonstrated by the construction of an 84-inch four-high cold rolling mill for the American Sheet & Tin Plate Co., Pittsburgh. The housings are being made of forged slabs and are expected to prove satisfactory, not only from the standpoint of cost but also from the standpoint of performance.

The essential element in this type of housing is a great elongated link of forged steel. It will be of laminated construction, electrically welded. The links, which have well-rounded ends, are 31 feet 10 inches long and 10 feet 3 inches wide. Thickness is just 2 inches short of 3 feet. The inside of the link, which is the window of the housing, is 5 feet 1 inch wide, giving a cross section, or post section, of 31 x 34 inches.

Possibility of employing rolled or forged steel in the construction of mill housings has been regarded with skepticism by leading steel mill equipment manufacturers and perhaps their position has been well taken in the past. Present demands, however, of the steel manufacturers for larger sizes, faster speeds and closer tolerances have increased the size of housings until in some cases they are approaching the limits of present-day foundries, and the new construction, which practically has no size limitations, may be given future consideration.

The E. W. Bliss Co., Brooklyn, N. Y., has undertaken to build this mill for the American Sheet & Tin Plate Co., for delivery to the latter's plant in Gary, Ind. Lloyd Jones, manager of the Bliss company's plant in Salem, O., is the designer of the unit and it is being built under his supervision at that plant.

Speaking before a joint meeting of the New

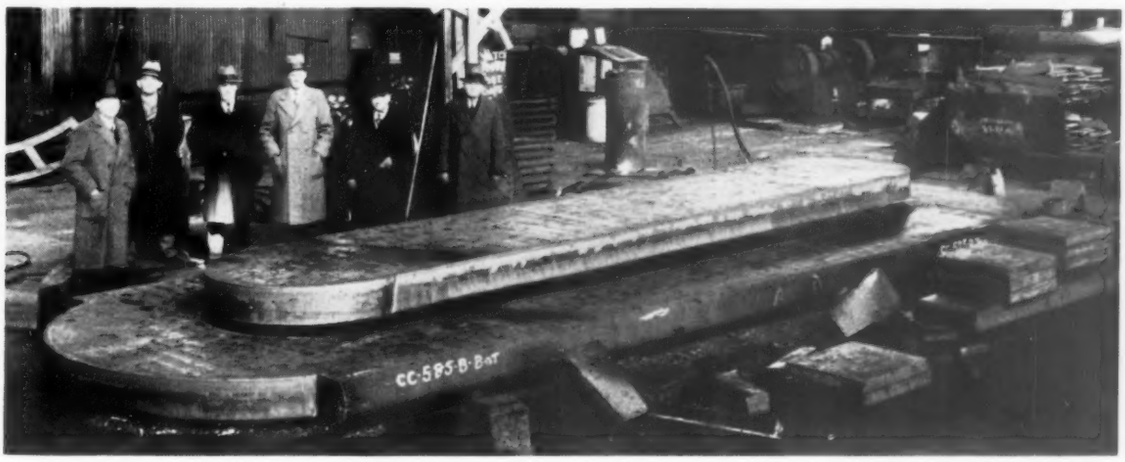


Fig. 2—This shows one of the forged plate housing links after the window has been flame cut from it. Overall dimensions of the link are 31 feet 10 inches long and 10 feet 3 inches wide. The window opening is 5 feet 1 inch wide

York section of the American Welding society and the American Society of Mechanical Engineers recently, H. G. Marsh, chairman of the trade research committee of the Carnegie Steel Co., Pittsburgh, described the conditions leading up to the design of these giant link-shaped housings and the factors involved in their manufacture.

High Grade Product Handled

Upon being invited to bid on this proposed mill, the designer gave careful consideration of all the requirements. In the first place, the function of the unit will be to roll a particularly high-grade product, marketed under the trade name of "superdraw tin plate," which is furnished to a tolerance of 0.00025 inch. The mill is to roll up to 84 inches wide and reductions of 40 to 50 per cent per pass are anticipated. Tolerances not only in thickness but also across the entire width are not to exceed 0.0005-inch. These requirements, regardless of the type of housings, require working rolls of 20 inches in diameter, backing rolls of 56 inches in diameter and a roll pressure of 13,000,000 pounds, which is believed to be the largest ever used in rolling steel.

The essential factor in mill housings for rolling material to such small tolerances is rigidity, or resistance to deformation. Deformation of all kinds must be kept to an absolute minimum and the stretch of each housing must be relatively equal. If one housing stretches more than the other under similar condition and stresses, trouble inevitably results.

It was decided, therefore, to depart from the usual practice and to use rolled or forged steel, a material which would eliminate this uncertainty. It was reasonable to assume that with this material the entire housing would be homogeneous and that both housings, within very small limits, would stretch equally. At the same time, size limitations could be removed and shipping and handling could be effected easier, for smaller sections could be shipped and assembled at the mill site.

The housing then was designed to take advantage of the qualities of wrought steel and it consists primarily of a great link of steel held upright on a cast-steel base. The link seats in the base, which is split in the center, and is held firmly in place by a key and seven large bolts which will be shrunk in place for greater security when finally assembled. This construction is shown in Fig. 3.

New Screw-Down Mechanism

Departing from the usual method of bulging the top of the housing to accommodate the screw through which the pressure is applied, Mr. Jones designed a self-contained screw-down mechanism which sets inside the link as shown in Fig. 6. This is essentially a screw jack exerting pressure between the rolls and the inside of the top of the link. Besides being compact and efficient, this design permits a simple link to be used with no square corners, projections or changes in section or contour, all of which produce concentration of stresses.

Give Thought to Costs

Up to this point the design was theoretically feasible, but it was obvious that welded steel must be within or very close to the cost of the casting, regardless of the advantages to be gained from the use of the wrought material.

The first thought of the designer was to build the housing of laminated plates, each 2 inches in thickness, with the laminations running in the same line as the mill, and welded intermittently along the edges. This type of construction is indicated in Fig. 4, Section *A*.

This idea incorporated the plan of flame-cutting the plates by the Carnegie Steel Co. with shipment of only the rough links, but due to the indicated cost of machining each plate on account of possible crown, as well as extra costs for plate width and flattening, this plan was dropped.

Furthermore, the large scrap weight from the inside of the link, even if it could be finished into 20 by 5-foot plates, was not good mill stock and the allowance would bring only a scrap price. Thus at this stage the price of the links was found to be running fully 0.5 cent a pound more than the casting.

The second proposal considered

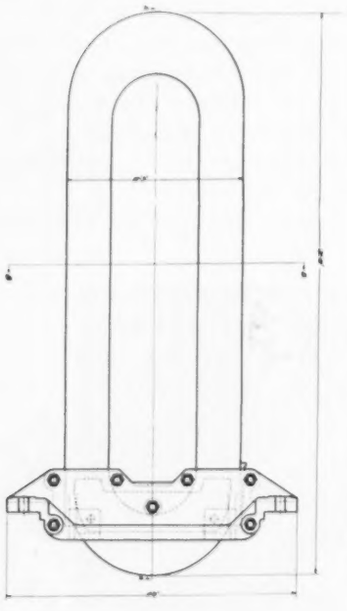


Fig. 3

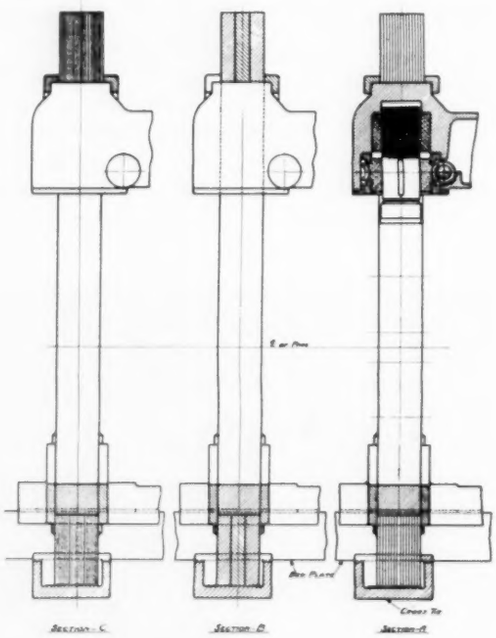


Fig. 4

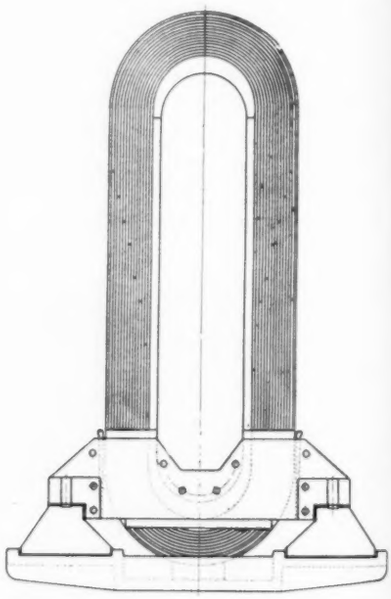


Fig. 5

Fig. 3—The wrought steel roll housing is essentially a large link of steel keyed and bolted in a cast-steel base. Fig. 4, Section A—The first conception of a wrought steel housing was a number of laminated plates 2 inches thick welded intermittently on the edges. Fig. 4, Section B—The design adopted consisted of three 10-inch thick plates bound together by welding (this has since been changed to four plates). Fig. 4, Section C—Another design considered called for welding together three packs of plates, each pack consisting of eight 1-inch thick plates stacked between 1¾-inch outside plates. Fig. 5—A third design, also eliminated, proposed the use of a series of welded bands shrunk one over the other. By this method no scrap loss was involved, but the labor of assembly was increased

was based on a plan to obviate machining of all the links. This proposal called for the use of eight 1-inch links, which would be stacked together with heavier links on the outside, perhaps as thick as 1¾ inches. Then, these ten links were to be clamped together and welded intermittently on the edges. Each of three packs to be built up in this manner would next be machined on each side to remove the plate crown. Following the machining operation the three packs were to be welded together to the desired thickness, as illustrated in Fig. 4, Section *C*.

Nonetheless, the scrap loss still was present, though the machining cost had been reduced. The scrap in 1-inch plates was just as heavy in total, just as useless and just as costly a discard as in the first plan calling for 2-inch plain material. Scrap loss in both instances, due to the large window of the housing mainly, ran fully 46 per cent of the total weight represented by the piled plates.

The weight of a slab large enough for a complete link of finished thickness was approximately 226 tons. Of this total, the weight of the discard material cut out of the center was 89 tons; the scrap from the ends, almost 16 tons. The weight of the finished link was thus planned theoretically to be 122 tons, or only 54 per cent of the slab's original weight.

Third Design Avoids Loss

A third design, Fig. 5, obviated the consideration of any scrap loss and was of especial interest from a welding standpoint. This scheme proposed running the laminations the opposite way from the first two plans and to build up the housing from universal mill plates of 34-inch width. The housing core was to be built up from four pieces. Two of these would be rolled slabs, the ends either forgings or castings made in semicircular form. These were then to be welded together to create a form around which the plates could be shrunk.

The latter plates, or strips, were to be from 1 to 1½ inches thick and cut to a little more than half the length of the circumference of the link. Each half was to be heated, then bent and formed around the core. The ends would then be cut off to the exact length, butt welded and the whole band shrunk on the core. The next layer would then be formed around the first one, also welded together and shrunk on.

The butt welds were to be staggered so that no two of them would come together and the edges adjacent to the butt welds were to be welded also for a short distance. By regulation of the amount of shrinkage given the various links, the load could be distributed evenly over the entire post section.

This design carried with it the advantages of a lower-priced material as against the cost of wide plates, the fact that there is no scrap loss and the fact that a housing, under this plan, could be built up to almost any size desired. There was, however, an increased labor item in assembling this construction.

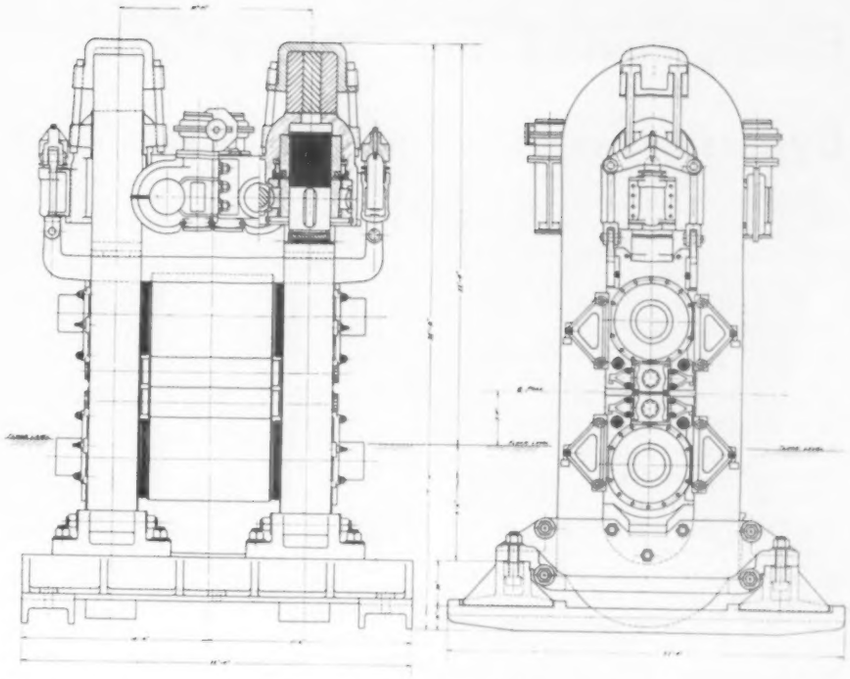


Fig. 6—Front and side elevations of the new 84-inch four-high mill showing the arrangement of the rolls, roll bearings and self-contained screwdown

The suggestion then followed—and this idea ultimately was adopted—that the Carnegie Steel Co. should make forged plates, each of about 10-inch thickness, in which case the scrap from the window could be utilized as first quality slabs. Three of such 10-inch plate forgings were to be made to make up the required thickness of 34 inches and each to be machined on both sides and welded at the edges, as indicated in Fig. 4, Section *B*. With slab price allowance for the window cut-out, this plan brought the cost of the welded link considerably below the cost of a comparable casting.

Proceed on Final Plan

Production of the 10-inch slabs has gone ahead at the Homestead plant of the Carnegie company and work is under way on the mill at the E. W. Bliss Co. plant at Salem, O. The housing assembled in its completed form will finish approximately 10 feet 3 inches in width. The thickness through the three slabs will be 34 inches and the over-all height of the housing 31 feet 10 inches. The cross-section of each post will be 31 x 34 inches, or an area of 1054 square inches.

In the bottom of the housing link a semicircular block, or saddle, will be installed to carry the bearings and distribute the force evenly over all three units. The amount of welding which will be necessary to bind the links together has not yet been definitely determined, but where welding is necessary, it will consist of a V-shaped groove about 1 inch in depth to be filled with weld metal. This weld is expected to extend down the straight sides and around the bottom curve and up the straight side for a distance of 4 to 5 feet. This additional welding at the bottom of the links is to be done to effect a better distribution of the load over the three links at the bottom of the housing.

Modern Lines Followed

The mill will be modern in appearance with its straight line design and sweeping curves at the top and is a decided departure from the conventional construction. Its performance will be watched with great interest by engineers as the American Sheet & Tin Plate Co. has under construction another mill at Vandergrift identical in size but with cast-steel housings made by United Engineering & Foundry Co., Pittsburgh.

(NOTE:—Since this article was written, the design of the mill has been changed somewhat so that each housing will be made of four forged slabs instead of three as described in the text. Otherwise, construction remains essentially the same.—THE EDITORS.)

Apex Electrical Mfg. Co., Cleveland, C. G. Frantz president, has acquired the business of the Laundryette Corp. Cleveland. Business of the latter will be handled separately from that of the Apex company.

Electric Furnace Steel, Rotary Cast, Bypasses Semifinishing Operations

(*Continued from Page* 12)

tions of processes not well adapted to volume production.

The first rotary casting machine was installed in the fall of 1928 in the plant of the Machined Steel Casting Co., Alliance, O., where acid open-hearth steel was available. This unit had a rotor diameter of 10 feet, and a mold cavity 4 x 4 inches, which permitted a 4 x 4-inch circular billet, 31½ feet long when straightened, to be cast.

The operation of the machine was so satisfactory from a mechanical standpoint that in 10 minutes from the time the steel was poured into the rotating mold, the billet was produced, ready for cutting and straightening. In order to secure a billet of basic steel weighing in excess of 2000 pounds, a much improved machine was designed, constructed and installed at the plant of a manufacturer of high-grade steels in Canton, O., in the summer of 1930.

In this location, steel of practically any desired analyses and at the required temperatures was available. This machine was operated until the conclusion of development work in June, 1932; it showed no mechanical weakness and required only routine attention in the way of lubrication, etc.

Mold Is Rotated

This casting unit includes a rotary table mounted on a vertical spindle. The latter is carried on Timken tapered roller bearings and driven through gears by a motor of small capacity. The entire machine is installed in a pit which is provided with the proper safeguards to eliminate the possibility of accident. A circular mold, 10 feet in diameter and designed for 6 x 6-inch blooms weighing approximately 3000 pounds, is mounted on a table in such a way that it can be removed easily. A removable bridge, which supports a pouring box, an insulation depositing device and other accessories, spans the table.

The rotary process of steelmaking differs from the orthodox method in that ingots, soaking pits and the blooming mill are not required. Steel is obtained by melting an all-scrap charge in an electric furnace. The heat is tapped in the usual way and poured immediately into the casting machine. In the development work at Canton a 2-ton electric furnace was used. At the time of casting, the table with its mold is revolved at the proper speed so that the application of pressure is continued from the time the steel is in a liquid condition until it has solidified completely. This operation requires approximately 10 minutes.

After the lapse of the proper time, the mold is removed from the machine, and the ring of steel stripped and immediately cut into the desired number of arcuated-shaped blooms. On account of the method of casting, the yield of homogeneous bloom is approximately 98 per cent or higher as compared with about 80 per cent in the case of blooming mill practice, as no pipe can form if a proper pressure exists when the steel passes through the solidifying cycle.

Involves Slight Heating

The temperature of the steel after this operation is completed is about 2000 degrees Fahr., so that little heating prior to rolling is necessary. Such heating as is required is executed in a short continuous heating furnace. When brought to the proper rolling temperature, which requires only a short time, the blooms are rolled on a 16-inch breakdown mill into billets, usually about 3 x 3 inches or less in cross section; passes on single stand rolls being provided so that billets from 1½ to 4 inches can be rolled. The cross section of the molded bloom is not actually square but is shaped somewhat similar to a trapezoid or keystone so that on the first rolling pass perfect straightening of the arcuated-shaped blooms occurs and subsequent rolling operations are identical with those of conventionally made blooms. Complete equipment, including that required for cutting, heating and rolling, was provided especially for development purposes.

At the plant now under construction at Detroit, however, an electric furnace of sufficient capacity will be employed to melt and refine all-scrap heats of 15 tons every hour. The output will be converted into 7 x 7-inch blooms by seven rotary casting machines mounted on Timken roller bearings and equipped with 10-foot diameter molds. The arcuated bloom sections will be converted into billets on a breakdown mill, and these subsequently to cold-finished bars and shapes of standard analyses. Because of the required production and of the element of flexibility necessary with the process, hand mills will be employed throughout for conversion purposes.

The quality of the product manufactured by this method has been checked in many tests and the results have been startling. The conditions under which solidification occurs are ideal for the production of homogeneous material which is free from inclusions, and on account of the pressure maintained and thermal control without pipe, also free from cavities or other detrimental characteristics.

Attention previously was directed to the new product as being a nondendritic steel and for the benefit of those not familiar with metallographic terms it may be stated that a dendritic structure usually forms in ordinary steel ingots as the steel cools from the exterior surface inward. During the cooling stage the individual crystals become joined, and grow into a structure which when magnified resembles a Christmas tree. This, in metallographic terms, is known as dendritic segregation and when this structure is elongated by the action of the rolls, banding and directional properties result, thus endangering the physical qualities of the metal. Steelmakers long have attempted to eliminate dendritic structures, but not until the new rotary process charted the course has this been possible.

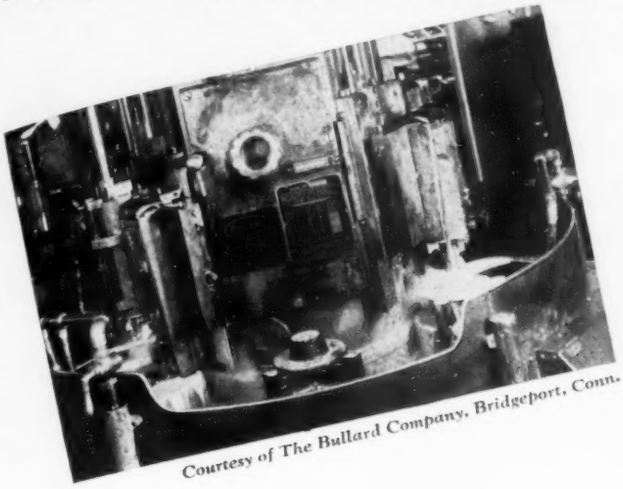
During the development work, a large number of production heats was made and a section cut from each ring was subjected to a deep etching test and samples from all products examined metallographically. Commercial inspectors checked the final 16 continuous heats in billet, bar and strip forms, and samples of numerous heats were subjected to metallographic and physical testing.

Values Are Compared

In addition to being made into blooms by the rotary process, portions of some of the heats were poured into ingots which were dispatched through the blooming mill, and the resultant blooms hot-finished into bars in the usual way. Tests of the physical qualities of the steel processed by two methods disclose values for the rotary cast product to be much higher than those obtained for the other portion of the same heat poured, bloomed and converted into bars by conventional methods.

The electric furnace used for melting makes possible an all-scrap charge, which in most isolated districts is essential; affords heats of a desirable tonnage; and, above all provides steel of the highest quality. The use of electric melting is economically justified by the fact that the inherent high yield of the process makes extensive remelting unnecessary and, in the case of low-carbon steels, a special procedure can be employed and the power and electrode consumption per ton radically reduced.

The necessity of employing bloom-



Courtesy of The Bullard Company, Bridgeport, Conn.

OPERATION: TURNING COMPANION FLANGE.
MACHINE: BULLARD MULT-AU-MATIC.
MATERIAL: STEEL FORGING.
SPEED: 78 FEET PER MINUTE.
DEPTH OF CUT: 3/16 INCH.
FEED: .018 INCH.
LUBRICANT: 1 PART SUNOCO TO 20 PARTS WATER.

Courtesy of Carborundum Company, Niagara Falls, N. Y.

OPERATION: GRINDING STEEL ROLL. 9 IN. DIAMETER, 18 IN. LONG.
MACHINE: LANDIS ROLL GRINDER, 12 IN. X 72 IN.
SCLEROSCOPE: 94 TO 101.
WHEEL SPEED: 1700 R. P. M.
WORK SPEED: 40 R. P. M.
COOLANT: 1 PART SUNOCO TO 30 PARTS WATER.

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Akron, Albany, Allentown, Altantic City, Baltimore, Battle Creek, Beaumont, Bridgeport, Buffalo, Chicago, Cincinnati, Cleveland, Columbus, Dallas, Dayton, Detroit, Flint, Grand Rapids, Harrisburg, Jackson (Mich.), Jacksonville, Miami, Montreal, Newark, New York, Philadelphia, Pittsburgh, Providence, Reading, Rochester, Scranton-Wilkes Barre, Syracuse, Tampa, Toledo, Toronto, Trenton, Tulsa, Wilmington, Youngstown and London, England.

ing mills in the production of steel by orthodox methods largely is responsible for the concentration of steel manufacture in large integrated units. Blooming mills have a capacity ranging from 35,000 to 60,000 tons a month, and in order to keep them operating to economic capacity blast furnaces, open-hearths and a large complement of finishing mills are essential. In conforming to these necessities a large operation results, and the plant cannot be located adjacent to a consuming center unless the consumption at this center is exceedingly heavy.

Since with the rotary process an all-scrap mixture can be used in the melting furnace and the need of a blooming mill is eliminated, it becomes possible to take the steel plant to the point of steel consumption, where, naturally, large quantities of raw material in the form of scrap accumulate.

As an example, the New England states in an ordinary year consume approximately 500,000 tons of merchant steel bars and produce large tonnages of steelmaking scrap. These bars are produced largely by mills in the Youngstown, Pittsburgh and Philadelphia districts, and the scrap chiefly is shipped into the same territories, so that a large expenditure for the transportation of these two commodities results.

By locating a plant employing the new process at an advantageous point, however, a high percentage of the foregoing charges is eliminated. This condition applies principally to many isolated communities in this country, Canada and foreign countries.

Charges Are Less

The investment and working capital required for these plants depends largely on the finished product desired, but is substantially less that of orthodox plants. In other words, the charges necessary for interest, depreciation and obsolescence are much less than those required in standard practice.

While practically all steel products can be made by the rotary process, at the moment only the casting of 8 x 8-inch blooms or slabs up to 16 x 4 inches is recommended. Such blooms or slabs would enable bars, strip, light plates, tubes, sheets, etc. to be produced.

And so, those who were responsible for the initial rolling and marketing of wide strip steel again present to the steel industry a new commodity and a new method of producing semifinished steel, both of which are more startling than was the contribution at Butler seven years ago.

Initial operation of the new plant of the Rotary Electric Steel Co. (Michigan), scheduled for September, will inaugurate a new industry within the realm of that part of the steel industry devoted to the production of semifinished steel.

The rotary casting process is covered by 30 patents granted or allowed in this country and 12 foreign countries.

Will Discuss Design for Structural Welding

The practical design of welded steel structures will be discussed by H. M. Priest, designing engineer, American Bridge Co., Ambridge, Pa., in a lecture to be presented Thursday evening, March 23, in the Engineering Societies building, New York.

This meeting, sponsored by the New York section of the American Welding society, will be open to any one interested in the design and fabrication of structural steel for general building purposes.

Essential features of structural welding will be reviewed to clarify the various methods of design and fabrication in accepted use and to introduce the major portion of the lecture. It will be the aim to present material which will enable designers to approach the problem of design and construction with assurance that they are following practices which have been found by experience to be safe and reasonable.

Much of the information to be presented in the form of charts and tables has been prepared especially for this meeting.

Horse Running Rack Is of Steel Construction

A new type of running rack featuring steel construction is about to make its appearance on horse racing tracks. Running racks are the latest innovation for the prevention of bad starts, protection against unruly horses and other difficulties at the barrier.

The new apparatus was invented by Rolly Pruett, Port Morgan, Colo., and the design perfected by Charles Mueller, master mechanic of the wire mill, Colorado Fuel & Iron Co., Pueblo, Colo. Construction is of chain-link fence and various sizes of pipe. It is 47 feet 2 inches long, 13 feet 2 inches high and 6 feet 4 inches wide. Weight of the rack alone is about 1½ tons; complete with padding, it weighs a little over 2 tons.

Weight of this new rack is said to be one of its greatest advantages, for present designs usually weigh more than 9 tons. Furthermore, the rack is demountable and can be assembled in less than 4 hours. While on the track it can be moved from place to place on wheels equipped with automobile tires. The builders expect to construct ten of the racks at once.

The rack provides separate stalls for each horse. When the barrier is lifted at the start, each animal is given an equal opportunity to get away. Separate stalls also give protection against fractious animals.

A.S.T.M. Committees Hold Meetings in New York

Recommendations for standards for purchasing and testing steel, wrought iron, cast iron, and nonferrous metals were made by research and technical committees of the American Society for Testing Materials at the anual group meetings of these committees in New York, March 6-10.

More than 100 meetings of various groups were held at which recommendations were made and the year's work reviewed. In connection with this program, the society conducted a regional meeting on motor lubricants on Wednesday, March 8.

The New York district committee, headed by F. M. Farmer, vice president and chief engineer, Electrical Testing Laboratories, was in charge of the week's program.

Awarded Lamme Medal

The 1932 Lamme medal of the American Institute of Electrical Engineers has been awarded to Dr. Edward Weston, Montclair, N. J., "for his achievements in the development of electrical apparatus, especially in connection with precision measuring instruments." Presentation will be made at the summer convention of the institute in Chicago, June 26-30.

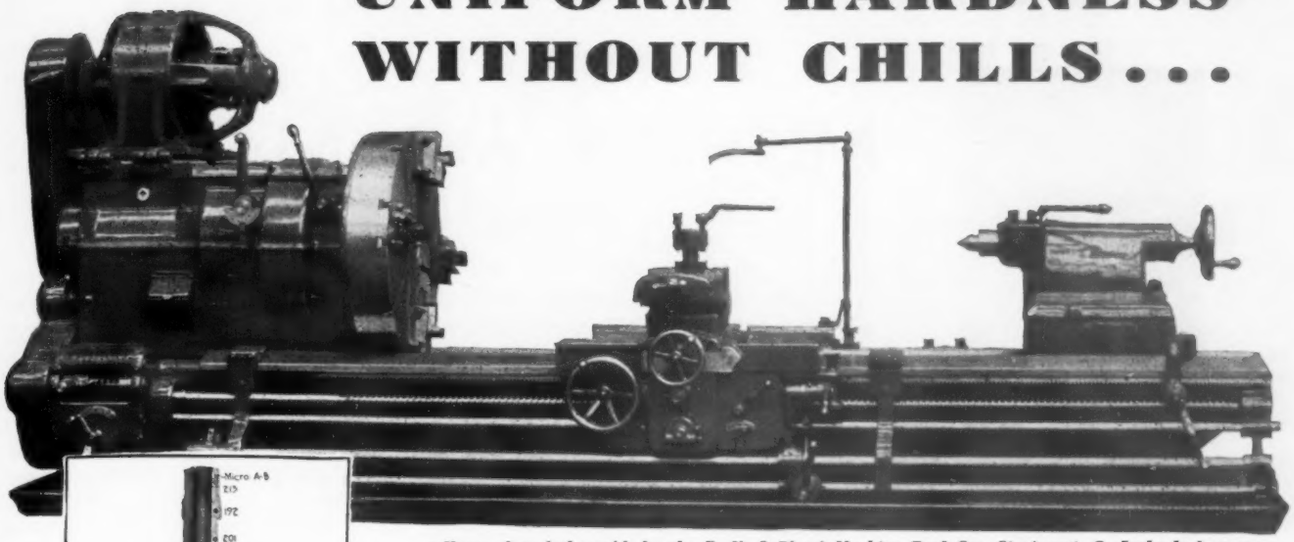
This medal was founded in accordance with a bequest of the late Benjamin G. Lamme, chief engineer, Westinghouse Electric & Mfg. Co., to be awarded annually for meritorious achievement in the development of electrical apparatus or machinery.

Mr. Weston is a founder and now chairman of the board, Weston Electrical Instrument Corp., Newark, N. J.

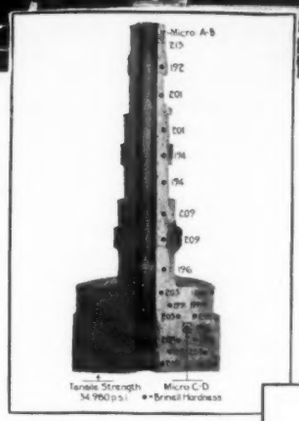
Plan New Welding Course

Another course in "designing for welded construction" is being arranged by the John Huntington Polytechnic institute, Cleveland, in co-operation with the Lincoln Electric Co., Cleveland, beginning April 3. Comprising a week of intensive work—six days in the welding school of the Lincoln company, with lectures each evening at the institute—the course is planned for designing engineers, draftsmen, structural engineers and others interested in improving their knowledge of welding design. Enrollment is limited to 30.

UNIFORM HARDNESS WITHOUT CHILLS...



● *Heavy duty lathe mfd. by the R. K. LeBlond Machine Tool Co., Cincinnati, O. Lathe bed produced from a mixture of 80% steel and 1% Nickel by Oberhelman-Ritter Foundry Co., Cincinnati, O.*



in these Nickel Cast Iron Lathe Parts!

● For more than forty years the Oberhelman-Ritter Foundry Co., Cincinnati, Ohio, has furnished castings to many of the nation's important machine tool builders. During this time they have experimented with many compositions and have developed a Nickel Cast Iron which gives uniformly dense castings without the use of chills. The Nickel Cast Iron adopted as standard has proven highly satisfactory for machine tool castings.

The cross-section view of the cylindrical test bar shown at left graphically illustrates the remarkable uniformity of Nickel Cast Iron. Observe that the structure is dense and gray throughout both the heavy base section and the top, while the hardness variation is less than 10 per cent from bottom to top.

By the adoption of Nickel Cast Iron for machine tool castings, high hardness, with good machinability, is accomplished without the uncertainty which is common to the use of chills. Oberhelman-Ritter is therefore producing castings of uniform structure and mechanical properties ideally suitable for lathe beds, tables, guides, cross-arms, turrets, gears, cams and other longer wearing parts.

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Making the Most of

METHODS AND MATERIALS

ACCURATE performance of the oxyacetylene cutting or shaping flame for heavy-gage steel has greatly expanded the use of this material, for it has enabled economical preparation of these heavy thicknesses for fabrication. Machinery housings, pressure vessels, and structural slabs and plates may be cited as examples. During the last year the process of severing has been developed to the point where cuts of great accuracy and within extremely narrow tolerances can be made on a commercial basis. Precision cutting to within a few thousandths of an inch is being obtained in 1¼-inch plate through careful set-up of cutting apparatus. The elementary function of this process is largely that of surface oxidation much in the form of tool planing. Wide strips or lineal areas are removed from the surfaces of the steel stock.

$ $ $

One of the large electrical manufacturers reports that due to the installation of modern grinding machines, the company was able to accept orders on lots of motors at a profit, whereas if these machines had not been available, it would have been impossible to accept the orders at a profit.

$ $ $

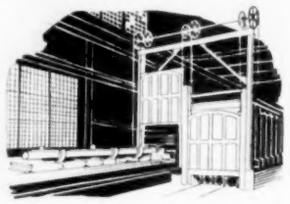
NICKEL provides three types of irons in the cast state, pearlitic, martensitic and completely austenitic, and the first two of these can be modified by heat treatment. A very wide range of structural and mechanical properties thus is made available, but the first two types are not stable on annealing. Chromium forms complex carbides which are not broken down by annealing and the addition of chromium may therefore be utilized to confer properties of stability and growth resistance. Where such an addition would spoil the machining qualities of the iron, additions of chromium plus nickel may be used to confer stability while machinability is preserved.

$ $ $

A diesel engine piston, worn under size recently was reclaimed by means of sprayed molten metal. The cylinder or liner was bored out and the piston built up to about ⅛ inch, making it slightly larger in diameter than the liner. It was then set up in a lathe and ground down to fit the cylinder, thus realizing a considerable saving. The piston was made of cast iron, therefore, iron wire was used in building it up. It was not considered advisable in this case to use another metal, because of the difference in expansion under working conditions.

$ $ $

Traces of sulphur gases in furnace atmospheres have very active properties in connection with scaling of steel. In the heat treatment of corrosion-resisting steel, for example, trace of sulphur gases seem to cause decided scaling at temperatures



around 1800 degrees Fahr. One investigator has found that sulphur in cutting oils remaining on the work caused the scaling. At 1800 degrees this steel heat treats nicely without scaling in an atmosphere containing 10 per cent oxygen, if it is kept thoroughly clean of sulphur carrying oils and if the gases do not have sulphur in them.

$ $ $

Application of porcelain similar to that used on plumbing materials for coating component parts of deep well turbine pumps is a development which has been studied by a West Coast manufacturer for several years. This company recently announced that it had devised a method whereby the impellers and bowls can be coated evenly. The porcelain coating is said to increase the efficiency of pumps approximately 5 per cent in addition to being completely acid and abrasion resistant. Surface tension characteristics of the porcelain when in a molten state cause it to flow into the pores of the cast iron and produce a glass-hard, glass-smooth surface.

$ $ $

Outstanding among results of an intensive investigation in the fusion welding of brass, bronze and other copper-base alloys is the definite recommendation for the use of an oxidizing welding flame rather than the previously used neutral flame. It was found that by adjusting the flame to the proper excess of oxygen, stronger, entirely nonporous and sound welds can be made in these copper alloys.

$ $ $

A NEW energized case hardening compound, claimed to have certain advantages over other materials used for this purpose, has been announced by a British manufacturer. Giving a good case, the material is said to have low shrinkage; gives off nonpoisonous fumes, being usuable with safety in nickel-chromium boxes; and for its bulk, is lighter in weight than other compounds. The mixture can be re-energized and used over and over.

$ $ $

Tests made by a German investigator to determine the respective surface qualities of cut and rolled threads showed the rolled threads to be much cleaner than the threads cut with a diehead. Also, the threads cut on bright iron stock appeared to be better than those cut on black stock.

$ $ $

Steel castings containing 3 per cent chromium are being used increasingly as machine parts in which unusual wear resistance is required. Cast steel jaw plates of this material in a rock crusher already have shown four times the life of white iron and are reported to be wearing at a rate which promises to give approximately eight times that life.

IMPROVING OPEN-HEARTH FURNACE DESIGN

BY WILLIAM C. BUELL JR.

Part IV—Mechanics of the Roof

(Twenty-Third Article of Series)

ALTHOUGH exceptions are shown in Fig. 21 the slab or laminated buckstays are the most advanced contemporary design. The slab buckstay offers a greater measure of strength for a similar cost and is subject to less distortion from indirect or direct heat than any other section with the possible exception of the laminated unit which while somewhat more costly than the slab type has all the advantages of the latter plus the ease of the framing of the whole structure. The cross-sectional design of the buckstays of the furnaces of Fig. 21 is given in Table XLVII from which it will be seen that the slab buckstay is considered favorably by most designers. Excepting in the case of the cast steel section shown, all designers are in agreement as to the desirability of the 15-inch depth of buckstay.

Various Costs Employed

Data upon which costs are computed follow: The cost of metal per pound includes slabs at $0.0117, plates and shapes at $0.0165 and steel castings at $0.03. The cost of fabrication per pound includes slabs at $0.0075, shapes $0.01, plates in the laminated design $0.015 and steel casting zero. The properties as given are for the complete buckstay unit and are calculated in accordance with the common methods. The cost per foot per section modulus, is an economic comparison of various designs which may be capable of successfully restraining a given loading. Since the 12 principal sets of buckstays on a 150-ton open-hearth furnace may cost approximately from $2000 to more than $4000 per furnace and the less costly design may be of the greatest strength, it is evident that proper buckstay design is worthy of considerable study.

If the furnace sections of Fig. 39 are assumed as being equipped with 5 x 15-inch slab buckstays in pairs and the loadings and stresses of Figs. 40 and 41 are segregated properly the maximum fiber stresses of bending and compression in the buckstays will be as in Table XLVIII. Inasmuch as combined stresses in excess of the allowable 9000 pounds are developed in the back walls of cases C and D, these two items also are solved as employing 6 x 15-inch buckstays which meet the condition of stress established.

An interesting result that develops in the data of Table XLVIII is the small effect resulting from the supporting of the entire roof system at the top of the buckstays. As may be seen, the entire compressive (columnar) requirements are but about one twentieth of the maximum allowable stress.

In prior chapters, 100, 150 and 350-ton furnaces designed in accordance with the principles of this work have been selected for certain detailed analyses, on the basis that these sizes represent the minimum, the most used and maximum furnace sizes for productive tonnage. From the loading and stress data of Table XLV and developed dimensions of previous chapters, have been calculated the reactions and moments in the buckstay systems of furnaces of these selected sizes designed with both tie rod and rigid binding. These calculations are summarized in Table XLIX. The buckstay design is assumed to follow items C and D of Fig. 39.

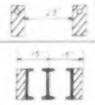
Similar Sections Required

In connection with the tie rod type of binding the reactions at the buckstay tops and the moments in both the front and back buckstays are noted as items of possible interest. However, in comparing these it should be borne in mind that while both buckstays are calculated independently, both buckstays actually will be required to resist the greater of the reactions and moments and, therefore, these components must be of similar sections, each sufficient to resist the heavier loadings.

Although, customarily, the number and section of buckstays at the front and back are alike the maintenance of this parity is unnecessary in the semirigid type providing the various members are calculated correctly and co-ordinated. The connection of the crosstie beams and the buckstay is ac-

Table XLVII

Buckstay Sections and Their Properties[1]

Furnace	Section	Detail	Weight per Ft. lbs.	Cost per Lb.[2]	Cost per Ft.	Combined Properties: Area Sq. In.	Moment Inertia I	Section Modulus S	Radius Gyration r	Cost per Ft. per S
A[4], N, O		Steel Casting 2½" Thick	620	$0.0300	$18.60	185	1713.14	195.8	3.04	$0.0950
B,C,D (Back Wall) E, H, K, L, M		5-15" Slabs	510	0.0192	9.80	150	2814.0	375.0	4.335	0.0261
J (Back Wall)		6-15" Slabs	612	0.0192	11.75	180	3375.0	450.0	4.335	0.0261
J (Front Wall)		6-15" Slabs with 3" ø Drilled Holes	612	0.0192	13.75[3]	166	2864.0	318.0	4.14	0.0430
D (Front Wall)		2-3x15 Slabs 2-15"-35 Lb. ['s 1-15"-66.8 Lb. I TOTAL	306 110 60 476	0.0192 0.0265 0.0265	5.88 2.92 1.59 10.39	90 32.22 17.68 139.90	1687.5 858.0 609.0 3154.5	225.0 114.4 81.2 420.6	4.19	0.0248
F		6-15"-35 Lb ['s	330	0.0265	8.75	96.66	2574.0	343.2	5.16	0.0255
G		5-1x15" Plates	510	0.0315	16.07	150	2814.0	375.0	4.335	0.0429
H		6-1x15" Plates	612	0.0315	19.28	180	3375.0	450.0	4.335	0.0429

[1] For Buckstay Spacing see Fig. 17. [2] Includes estimated cost of fabrication and details. [3] Buckstays, furnace A, differ in detail from those of N and O which are shown. [4] Data on this arrangement are approximate only, due to lack of information. [5] Includes $2.00 per foot for drilling.

Table XLVIII

Summation of Stresses in Buckstays†

Case	Position	Maximum bending moment, in.-lbs.	Maximum fiber stress in bending, lbs./sq. in.	Columnar loading, lbs./sq. in.	Maximum fiber stress in compression, lbs./sq. in.	Combined fiber stress, lbs./sq. in.
A	Front	1,936,800	5,170	68,725	460	5,630
	Back	1,936,800	5,170	64,725	435	5,605
B	Front	1,956,000	5,220	71,105	475	5,695
	Back	1,956,000	5,220	67,105	480	5,700
C	Front	1,833,600	4,980	61,500	410	5,390
	Back	3,121,600	8,570	73,900	495	9,065
	Back*	3,121,600	7,150	79,000	440	7,590
D	Front	1,221,600	3,260	60,800	405	3,665
	Back	3,813,600	10,170	76,280	510	10,680
	Back*	3,813,600	8,470	81,200	450	8,920
E	Front	1,845,600	4,920	61,500	410	5,330
	Back	2,018,400	5,380	85,060	570	5,950
F	Front	2,097,600	5,590	60,800	405	5,995
	Back	1,824,000	4,870	87,460	590	5,460

*These items are computed for 6 x 15-inch slab buckstays having combined section modulus of 450 and area of 180 square inches.

†Each buckstay is assumed as a pair of 5 x 15-inch slabs with a combined section modulus of 375 and combined area of 150 square inches.

complished in such a manner that the full strength of the cross beams are developed in the connections. Moments of considerable magnitude, as shown in Table XLIX, are developed in the top cross beams; the maximum bending moments are found at the cross beam ends, as examination of Fig. 41-D shows. Channels having section moduli somewhat under those required by calculation are suggested in Table XLIX as appropriate for the cross beams of the 100 and 150-ton furnace bindings.

The inclusion of plate gussets of proper design will reinforce sufficiently such channels at their ends to produce the required strength in the areas of the greatest moments. The maximum bending moments that must be taken by the buckstays as beams and the total weight the buckstays will be required to support as columns also is given in Table XLIX.

Various combinations of slab buckstays are listed and the stresses in bending and compression and total of the combined stresses are indicated for the various conditions to which they are considered as applying. Excepting the five conditions as indicated by blocking out, all combinations give the total stress as less than the designated 9000 pounds.

In the tie rod type of binding, as previously mentioned, the back wall or maximum effect actually must be duplicated in the front wall buckstays, and, therefore, a set of buckstays selected to meet back wall requirements also will be used at the front wall.

(To be continued)

Table XLIX

Stress in Selected Buckstay Systems and Approaching Steel Sections

Elements	Furnace Sizes	100 TONS				150 TONS				350 TONS			
	Type of Binding	Tie Rod		Semirigid		Tie Rod		Semirigid		Tie Rod		Semirigid	
	Position	Front	Back	Front	Back	Front	Back	Front	Back	Front	Back	Front	Back
Top Tie Rods	Reaction at Buckstay Tops, lbs.	13,650	19,430			24,600	33,530			32,825	40,350		
	Required Area in Tie Rods at 6000 lbs. Allowable Fiber Stress	3.24 in²				5.60 in²				6.73 in²			
	Appropriate Rods	2-2"ϕ@2.3=4.6 in²				2-2½"ϕ@3.7=7.4 in² or 3-2"ϕ@2.3=6.9 in²				2-3"ϕ@5.4=10.8 in² or 3-2½"ϕ@3.7=11.1 in²			
Cross Beams	Maximum Bending Moment Inch–Pounds			835,200				1,200,000				1,324,800	
	S at 9000 lbs. Allowable Fiber Stress			92.8				133.3				147.2	
	Appropriate Sections			2-15"33.9 lb. [S=83.36 or 2-15"45 lb. [S=99.7				2-15"55 lb [S=114.4 or 2-18"58 lb [S=149.0				2-18"58 lb. [S=149.0	
Buckstays	Maximum Bending Moment Inch–Pounds	1,226,400	2,080,800	813,600	2,343,600	1,833,600	3,216,000	1,221,600	3,813,600	2,460,000	4,270,800	1,707,600	4,646,400
	Columnar Loading, lbs	41,220	46,160	43,220	48,160	61,500	73,900	60,800	76,280	72,450	84,250	75,450	87,250
	Maximum Fiber Stresses Using: 2–4×15" Slabs S=300, A=120 in² — Bending =	4088	6936	2712	7812								
	Compression =	344	385	360	402								
	Combined Fiber Stress	4432	7321	3072	8214								
	2–5×15" Slabs S=375, A=150 in² — Bending =	3270	5560	2170	6260	4890	8580	3260	10170	6530	11390	4560	12400
	Compression =	275	308	288	321	410	493	405	509	483	562	503	582
	Combined Fiber Stress	3545	5868	2458	6581	5300	9073	3665	10679	7013	11952	5063	12982
	3–5×15" Slabs S=562, A=225 in² — Bending =					3265	5725	2175	6790	4380	7600	3040	8260
	Compression =					274	329	271	339	322	375	336	388
	Combined Fiber Stress =					3539	6054	2446	7129	4702	7975	3376	8648
	2–6×15" Slabs S=450, A=180 in² — Bending					4080	7150	2715	8480	5470	9490	3800	10340
	Compression =					342	411	338	424	403	468	420	485
	Combined Fiber Stress =					4422	7561	3053	8904	5873	9856	4220	10825
	3–6×15" Slabs S=675, A=270 in² — Bending =							1820	5650	3645	6330	2530	6880
	Compression =							226	283	269	312	280	323
	Combined Fiber Stress =							2046	5933	3914	6642	2810	7203
	2–6×18" Slabs S=648, A=216 in² — Bending =							1884	5880	3790	6590	2625	7140
	Compression =							282	353	336	390	350	404
	Combined Fiber Stress =							2166	6233	4126	6980	2975	7544

SCANNING THE FIELD OF TECHNOLOGY

A Digest of Important Developments Pertaining to the Production, Processing, Application and Performance of Steel

Quenched, Tempered Wheels

By J. D. Tyson, in Baldwin Locomotives, published quarterly by the Baldwin Locomotive Works, Philadelphia, January, p. 19, 6 pp., 13 ills., 4 tables.

Shelling of treads on solid wrought carbon steel car wheels led to an investigation of this type of failure; it was concluded that shelling was a fatigue failure of the steel at the surface of the tread, due to excessive compression stresses. An improved method of heat treating was suggested to overcome the difficulty. Standard Steel Works adopted a quenching and tempering system that produced beneficial results. Wheels now, after being cooled to atmospheric temperature subsequent to press forging and rolling, are heated above the upper critical temperature of the steel, quenched in oil, and reheated to a temperature below the critical to relieve any internal stresses set up by quenching and to develop maximum ductility with the desired hardness. Photomicrographs of grain structures of the treated wheels are illustrated; service tests are outlined.

—STEEL, 3-13-33

Quality of Metal Surfaces

By John Gaillard, in Industrial Standardization, February, p. 31, 5½ pp., 7 ills.

Graphical records of surface unevenness provide an accurate method of analyzing the finish produced by various tools. Methods are described for observing the quality of surfaces, such as making a gelatine cast and slicing it for observation microscopically, copper plating the surface and then cutting a cross section for microscopic observation, and various optical methods. Direct investigations of surfaces are possible by means of a fine pointed needle which transmits irregularities through a loudspeaker system or upon a screen in magnified form.

—STEEL, 3-13-33

Welding Engineering

Product Engineering, March, p. 82, 18 pp., 25 ills.

Eight recognized authorities discuss in symposium form the problem of engineering the design of welded products. Their subjects include scope and limitations of processes; materials available; specifications for welded products; stresses and deflections; concentrated stresses; fatigue failure; vibrations damping; and appearance.

—STEEL, 3-13-33

Alloy Metals

By W. J. Wachowitz, in Welding, February, p. 68, 2½ pp., 4 ills.

Description of a modern plant erected and equipped to fabricate and weld straight chrome and chrome-nickel alloy steels.

—STEEL, 3-13-33

Carbide Milling Cutters

By Frank W. Curtis, in American Machinist, Jan. 4, p. 9, 3 pp., 2 ills., 3 tables.

Recommended procedure for obtaining maximum results from the use of tungsten carbide cutters for face milling. Speeds and feeds based on three years of research are given for favorable conditions and for limiting factors.

—STEEL, 3-13-33

Welding Pressure Vessels

Journal of the American Welding Society, February, p. 13, 2½ pp., 2 ills.

Some recent additions to the American Society of Mechanical Engineers boiler construction code, with special reference to welded attachments of nozzles and outlet connections.

—STEEL, 3-13-33

Antifriction Bearing

By Thomas Barish, in Machinery, March, p. 467, 3 pp., 6 ills.

Simplified method of mounting antifriction bearings, involving the use of a new type of bearing—a standard single-row bearing with a groove cut in the periphery of the outer race. This groove accommodates a snap ring which will take thrust in one direction, thus eliminating the need of providing a housing shoulder against one side of the outer race.

—STEEL, 3-13-33

Arc Welding Generator

By G. A. Johnstone, paper presented at winter meeting of the American Institute of Electrical Engineers in New York, Jan. 23-27, preprinted, 3 pp., 6 ills.

Extensive tests have demonstrated important advantages favoring the use of high-frequency current for electric arc welding and have led to the development of a 900-cycle double induction generator of attractive characteristics and capable of supplying several different arcs at once.

—STEEL, 3-13-33

Heat Treating Furnaces

By H. J. Gregg, in Metal Progress, March, p. 37, 4 pp., 3 ills.

Influence of fluctuating schedules and intermittent operation on heat treating costs. Oil fired furnaces, electric furnaces, artificial and natural gas fired furnaces, diffusion combustion forge furnaces, continuous gas carburizing furnaces, and butane fired furnaces are included in the discussion.

—STEEL, 3-13-33

Grinding Bar Stock

Western Machinery and Steel, December, p 424, 3½ pp., 8 ills.

Production of accurate round bar stock by centerless grinding method. This grinding method permits sizing bars to within 0.0005-inch, as well as a quick inspection of the stock for soundness.

—STEEL, 3-13-33

Repairs to Bridges

By A. G. Leake, in Journal of the American Welding Society, February, p. 30, 1½ pp., 1 ill.

Outline of a method of repairing and strengthening weak or corroded joints in pin connected eyebar bridges by arc welding, and at the same time building up additional bearing on pins wthout the use of false work.

—STEEL, 3-13-33

Roll Grinding

By H. J. Wills, in Machinery, March, p. 437, 3½ pp., 4 tables.

Third of a series of five articles giving complete directions for roll grinding operations and wheel selection. This installment deals specifically with the grinding of steel rolls, chilled iron rolls, jewelers' rolls, chromium plated rolls and paper-mill rolls.

—STEEL, 3-13-33

Cold Heading Materials

By H. B. Pulsifer, in Metal Progress, March, p. 13, 5 pp., 9 ills., 1 table.

Importance of structure rather than composition is pointed out in this discussion of typical materials for cold heading operations.

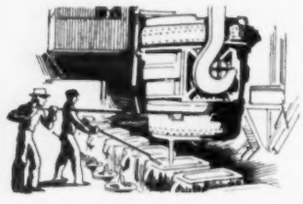
—STEEL, 3-13-33

PROGRESS IN STEELMAKING

WATER-LUBRICATED nonmetallic bearings frequently stick to the journal to such a degree that when the mill is placed in operation after a week-end shutdown, excessive starting loads are imposed on the prime movers. This condition is caused by slight oxidation or rust particles forming on the journal in contact with the nonmetallic surface. Feeding a small quantity of either oil or grease to the bearing surface a few minutes prior to stopping the mill completely eliminates this condition. The lubricant acts as a slushing medium over the metallic surface of the journal and prevents the formation of rust. It has been noted with this practice that starting conditions are entirely normal and both the journal and bearing are maintained in excellent condition.

• • •

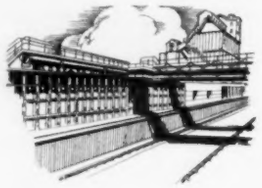
Within recent months the tendency of roll grinding departments in the steel industry has been to utilize finer grit abrasive wheels in all stages of roll surfacing. The wheels perform best at slower traverse speeds than usually are provided on most roll grinding machines. Reducing the traverse speed to 2 inches a minute is advocated.



HIGHLY satisfactory pouring results because of uniform coating are accorded a new method of applying graphite to ingot molds now being utilized at a southern steel plant. Instead of spraying, the graphite is vaporized at 85 pounds pressure and only the fog and not the liquid is allowed to strike the interior mold wall.

• • •

Heavy steel planking with a safety tread rolled into the top surface is a new product designed by an Ohio steel company to meet heavy-duty requirements at highway crossings.



COMPARATIVE figures on the thermal units consumed at a plant near the Pittsburgh district in coking a pound of coal disclose an average of 1118 B.t.u. when by-product ovens are underfired with blast furnace gas and 1101 B.t.u. when coke oven gas is used.

• • •

What is said to be the most complete test ever made on stainless steel recently was inaugurated by an English producer in the Sheffield district. The test program is being conducted at sea on board a large vessel; involves in excess of 75 samples of nuts, bolts, nails, wire and wire netting, sheets, plates, etc.; and, is for the purpose of determining if other conditions arise apart from the action of the sea and weather which cause failure.

• • •

High-tensile tubing closed at the bottom to form a conical point of varying degrees of sharpness is a recently developed product of an English manufacturer of tubular goods to replace wooden pit props in mines. The maker claims this type of prop is stronger than the wooden type, and that when strain begins, the steel tube instead of breaking or buckling, is pushed into the floor of the working while maintaining the maximum resistance of a rigid prop. Tests of a member 5 feet long and 4 inches diameter disclosed no bending until a load of 71 pounds was applied.

• • •

Open-hearth ladles rarely are out of service for skull cleaning at a shop in the Pittsburgh district where an automatic puller, suspended from the crane hook removes skulls while still soft and plastic.

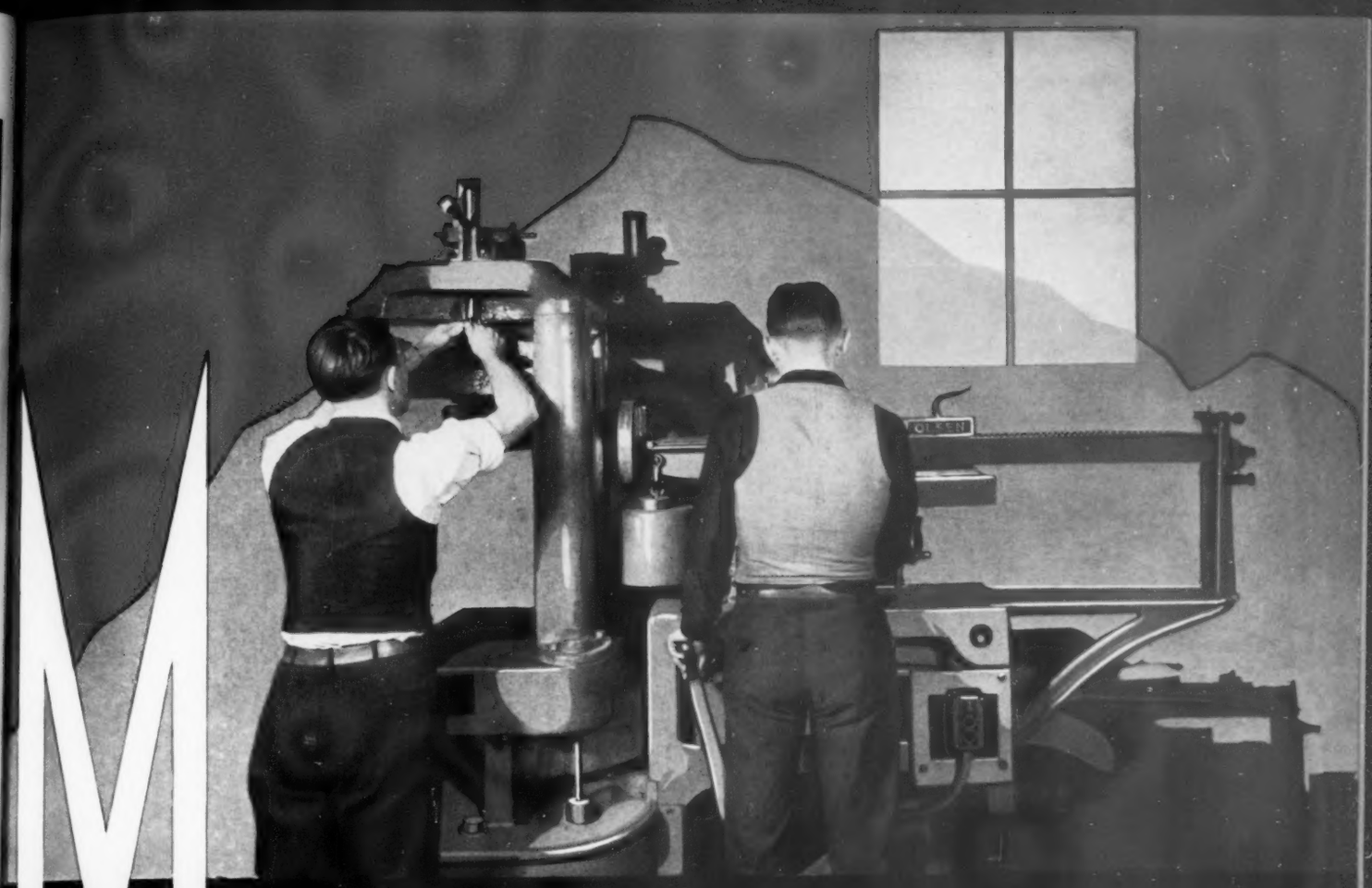
• • •

Only one set of oil-hardened steel dies was used to draw all wires used in a steel wire rope, about 7½ miles long, in one continuous length without joints or splices, weighing 57 tons and measuring 4⅝ inches circumference.

• • •

From 10,000 to 15,000 tons of semifinished steel, mainly blooms, is being classified by analyses at a steel mill in the Pittsburgh district using a new accounting system. This stock represents excess production for over 1000 customers. The analyses are being classified along with those of the customer who might use the blooms, the intention being to reduce the quantity carried in stock.

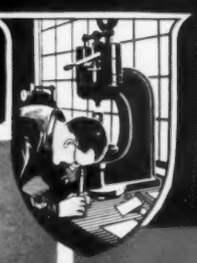
CONTROLS for steelworks mixers now are available which keep the mixer in the tilted position as long as the operator holds open the master switch. When this switch is released the vessel automatically returns to the upright position.



MEETING UNUSUAL REQUIREMENTS for PHYSICAL PROPERTIES

MODERN machine design often calls for parts with narrow limitations on physical properties. Tensile strength, yield point, elongation, reduction of area, hardness or other specifications denote steel qualities that must be furnished. Such requirements may demand wide metallurgical knowledge and strictest laboratory control.

The cold finished steel industry offers no better scientific facilities than are maintained by Union Drawn. If it is possible for your specified chemical and physical requirements to be met, we will meet them. The most critical buyers have long depended upon the exceptional training and equipment of this organization to furnish their restricted technical needs.



VIGILANT LABORATORY CONTROL

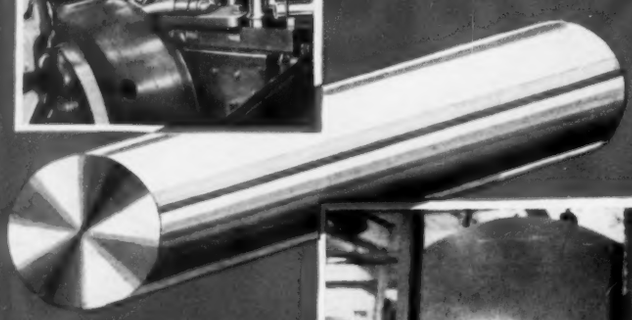
UNION DRAWN STEEL CO.

MASSILLON, OHIO

COMPARISONS EMPHASIZE THE SPECIAL PROPERTIES of UNION HYMO STEEL

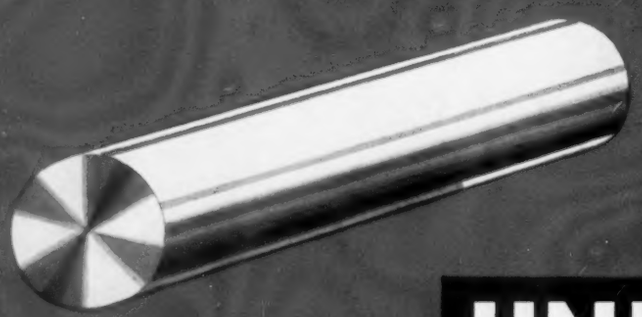
COMPARED WITH
S.A.E. 1112
(Bessemer Screw Stock)

Union Hymo has such good machining qualities that speeds and feeds on automatic screw machines are almost equal to those with S.A.E. 1112.



COMPARED WITH
S.A.E. 1120
(Open Hearth Screw Stock)

Union Hymo is stronger, tougher, more uniform, more sound and less susceptible to defects than S.A.E. 1120.



COMPARED WITH
S.A.E. 1020

Union Hymo carburizes to a given depth more rapidly than S.A.E. 1020. Required heat treatment temperatures are also lower thus reducing warpage and distortion difficulties.

COMPARING Union Hymo with S.A.E. 1112, 1120 and 1020 is particularly appropriate as these grades are so widely used and their properties generally understood.

Securing a steel with excellent machining qualities is no longer a problem in the manufacture of parts that must show good physical properties. Union Hymo is an admirable solution for a wide range of applications. It will cut almost as easily as S.A.E. 1112 and where properly applied gives as good life and service for carburized parts as S.A.E. 1020.

Send for descriptive booklet. Our metallurgical department will be glad to go into details of carburizing as they apply to your particular requirements.

UNION DRAWN STEEL CO.
MASSILLON, OHIO

UNION COLD DRAWN STEELS . . .

COLD DRAWING PROVIDES MAXIMUM MACHINABILITY

NEW EQUIPMENT

PRODUCTION FABRICATION TREATMENT FINISHING

Removable Drilling Bit Has Special Thread

Timken Roller Bearing Co., Canton, O., recently placed on the market a new type of removable drilling bit. Shown herewith, the tool replaces the conventional bit which is forged on the end of the hollow drill steel. The new bit is held tightly against an upset shoulder on the steel by a special thread designed for strength and easy removability. This left hand thread is opposed to the direction of rotation of the steel so that the bit is kept tightly against the shoulder while drilling.

The hammer blow is transmitted from the steel through the shoulder to the body of the bit. None of its force is absorbed by the thread. When the new bit becomes too dull for further service it merely is removed and replaced with a new one.

Removable drilling bit developed by Timken Roller Bearing Co.

These bits are forged from a special alloy of fine grained steel. Experience on many operations, it is claimed, has shown it to be more economical to throw away a used Timken bit than it is to resharpen the conventional type.

◆

Ventilator May Be Operated By Wind or Electricity

Allen Corp., Fourteenth avenue at Howard street, Detroit, recently developed a turbine ventilator which introduces a new type of exhauster to the ventilating field. As a wind-operated ventilator it is efficient; electrically operated, it is a blower exhausting a predetermined amount of air regardless of temperature difference, wind velocity and direction, or other variable conditions. The worm geared-head motor and clutch are mounted on top of the rotor, as shown in the illustration, leaving the throat of the ventilator clear of obstructions.

Specifically the new unit may be employed for removing gas and fumes which are generated as a result of various manufacturing processes. Pickling departments of steel mills usually present problems of ventilation which can be handled easily with the new electro-wind turbine ventilator. No penthouse is required, inasmuch as the wind regardless of direction or velocity actually aids the exhaust of the unit. It is easily installed on any standard ventilator base and in most cases may be plugged into a lighting circuit for power connection.

Allen Electro-Wind turbine ventilator, with motor cover removed

◆

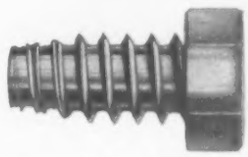
Whipcord Is Employed As Cone Belt Base

Manhattan Rubber division of Raybestos-Manhattan Inc., Passiac, N. J., has redesigned its cone belts in which the strength member now consists of a layer of closely spaced pretreated whipcord wound continuously and completely imbedded in rubber. The new belts are said to have an increased service life of four to eight times that of earlier designs. Low elastic stretch, high degree of bending flexibility and ample tensile strength are features of the improved product. In addition to the new design the company has combined the various odd sizes of cone belts into sixteen standard sizes.

◆

Hexagon Head Hardened Cap Screws Are Self-Tapping

Parker-Kalon Corp., 200 Varick street, New York, is manufacturing a new hexagon head hardened self-tapping cap screw. Like other types of self-tapping fastening devices developed by the company, these screws, shown herewith, form their own thread in material. The new screws are used extensively for fastening to sheet metal from 24 to 10 gage; to steel plate and structural shapes up to ½-inch thick; and to solid sections of brass, bronze, aluminum and die castings, slate, ebony, asbestos, etc.

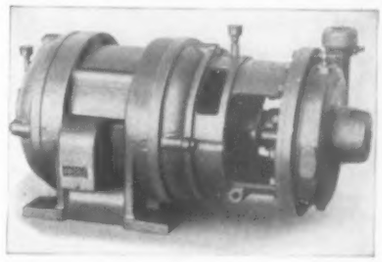


Parker-Kalon self-tapping cap screw

◆

Extends Line of Motor-Driven Single-Shaft Pumps

Allis-Chalmers Mfg. Co., Milwaukee, has extended its line of SSU motor-driven single-shaft, two-bearing pumping units. The three new sizes are designed to work against heads up to 100 pounds and above, covering a range in capacity from 30 gallons per minute to 140 gallons per minute.



Allis-Chalmers single-shaft two-bearing pumping unit

Pump and motor, shown herewith,

both are built and guaranteed by the same manufacturer, eliminating any divided responsibility. A single shaft is used on which to mount the motor rotor and the pump impeller.

◆

Circuit Breakers Fitted For Outdoor Use

Square D Co., Detroit, is marketing a line of weatherproof circuit breakers in capacities up to and including 50 amperes. Units, as shown in

Weatherproof circuit breaker manufactured by Square D Co.

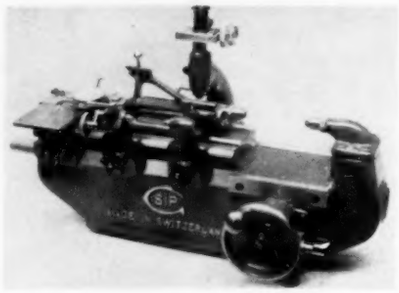
the accompanying illustration, are contained in a special box provided with a water shed top and cover.

An auxiliary spring lid protects the breaker handle and a water shed under the lid prevents water from entering at the handle opening. These features make such breakers ideal for yard lighting, meter entrance, mine service, traffic light control, street lighting, and flood lighting.

◆

Markets Unit for Checking Working Gages

R. Y. Ferner Co., Investment building, Washington, as American agents for Societe Genevoise, Geneva, Switzerland, is marketing a machine designed for accurate and rapid checking of working gages, such as plug gages, thread gages, snap, gap and profile gages, and disk and rectangu-



Machine for checking working gages is marketed by R. Y. Ferner Co.

lar gages up to 4 inches in size. The unit, shown herewith, also has an attachment for the measurement of the pitch of taps and thread gages. Such gages which generally are used in applying tolerances of 0.0002 to 0.0005-inch can be checked on this machine to an accuracy of 0.00005-inch.

All measurements are made by direct comparison with a line standard ruled on glass of a special composition having practically the same coefficient of expansion as steel. Readings are made by a micrometer microscope direct to 1/20000-inch per division.

◆

Develops Line of Motorized Reduction Units

Foote Bros. Gear & Machine Co., 5301 South Western boulevard, Chicago, has announced a complete line of motorized reduction units, designated IXL. The mechanisms cover a wide range of applications in sizes and types ranging from ½ to 150 horsepower capacity and ratios from 2 to 1, up to 3600 to 1. They permit use with right angle, straight line or offset drives, either horizontal or vertical.

Motor characteristics may be varied to suit the particular application including normal starting torque, high starting torque, high

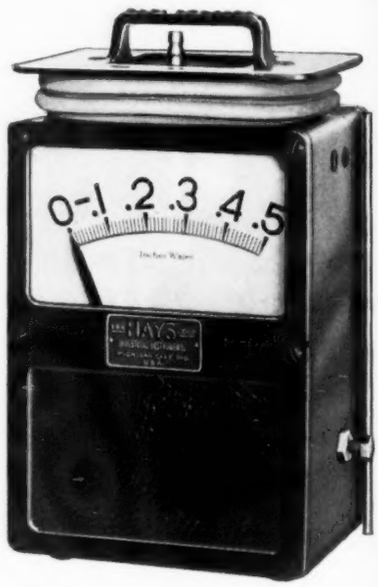
Foote Bros. helical gear type motorized reduction unit

slip, adjustable speed, multispeed, etc. The new line embodies two main divisions, the radiating worm gear type, and the helical gear type shown herewith. The worm gear line covers ratio ranges from 4 to 1, to 60 to 1 single reduction style, and up to 3600 to 1 in the double worm reduction type. The helical type is made in single, double and triple reduction ratios, providing output speeds ranging from 4 to 850 revolutions per minute.

◆

Portable Style Draft Gage Is Dry Type

Hays Corp., Michigan City, Ind., has placed on the market a new line of dry-type pointer draft gages, available in single and two unit styles, for portable work as well as for wall and flush mounting. This gage, shown herewith, has a number of applications in the steel indus-



Newly developed Hays dry-type portable style draft gage

try, on industrial furnaces for example. Features include a black lacquer finished aluminum case with glass window and slip-over metal cover; convenient reel for carrying rubber tubing; clips for carrying metal tube which is inserted into smoke pipe to get draft reading.

The standard ranges are either ½ inch or 1 inch water. Differential types also can be supplied for indicating resistance, gas or air flow. For forced draft stokers two-pointer gages with upper scale having range of +5 inches and lower scale +.2 inches to 0 to —.3 inches water are afforded.

Bank Reform, Currency, Strengthen Sentiment

Anticipation of Mild Inflation Generates Consumer Interest—Ingot Rate Dips to 13½ Per Cent—February Steel Output in Substantial Gain

PROSPECTS for early improvement in the banking and currency situation have brightened the outlook in iron and steel. First effects of action taken at Washington to buttress the country's banking structure, and to issue additional currency, with the possibility of mild inflation just ahead, have been to arouse consumer interest in materials, and to give a new element of strength to prices.

A few isolated feelers for long-term, large-lot requirements have appeared. A more serious threat of higher prices may manifest itself first by a desire to build up stocks in anticipation of consumptive demand. So low are inventories that these requirements alone would increase production to an encouraging level, and support a moderate rise.

Detroit expects retail automobile sales to snap back rapidly, once confidence is restored. In the East importers of foreign iron and steel products have been unable to make new transactions owing to uncertainty of the dollar's value abroad. Nonferrous metals have advanced $5 to $10 a ton. Scrap is stronger.

It may be the middle or the latter part of this week before a reopening of banks definitely begins to have a stimulating influence, but consumers and producers alike are keen students of the situation, the former likely to anticipate stronger prices by ordering farther ahead; and the latter by showing a disposition to withdraw second quarter prices recently announced. It is understood some companies already are considering the withdrawal of their prices. In certain instances new contracts are being booked, subject to price revision.

Meanwhile, steel ingot production has declined to 13½ per cent, almost back to the level of Christmas week. Chicago, down 4 points, shows the greatest deflection. Finishing mill operations, especially in sheets, strip and tin plate, also show a sharp reduction. This has been due to suspension of shipments, few orders being canceled.

The momentum steel ingot production was acquiring before the bank interruptions set in is shown by output for February which averaged 44,378 gross tons daily, up 14 per cent from January, and the highest since April last year. February also was the first month since April in which the ingot rate rose above 20 per cent. Despite the fewer number of working days, total output increased to 1,065,080 tons, from 1,006,297 tons in January. Reflecting the restraint on orders in the latter part of the month, however, the United States Steel Corp.'s unfilled tonnage as of Feb. 28, 1,854,200 tons, represents a loss of 44,444 tons from Jan. 31.

Promise of a large tonnage of miscellaneous steel requirements is held out by President Roosevelt's proposal for a $500,000,000 bond issue for reforestration and other public work. Structural shape awards for the week advanced substantially to 16,055 tons, including 5000 tons for the St. Paul postoffice. The Steel corporation's western subsidiary is low for fabricating 120,000 tons of steel for the San Francisco-Oakland bridge. Railroad inquiry is limited mainly to 10,000 to 15,000 tons of miscellaneous steel for the second quarter for the Pennsylvania.

The markets for raw materials, especially pig iron, have shown the quickest response to consumers' fears of price inflation; with an inquiry for 2000 tons from an Indiana melter, and for 3000 to 5000 tons from Pennsylvania foundries. A Pittsburgh interest has purchased 3000 to 4000 tons of heavy melting steel scrap at an advance of 25 cents over its previous price. Japan has taken 7000 tons additional scrap, and is inquiring for 1000 tons of tin plate.

STEEL's scrap composite this week is up 5 cents to $6.46; the iron and steel composite remains $28.35; and the finished steel composite, $45.60.

Composite Market Averages

	March 11	March 4	One Month Ago Feb., 1933	Three Months Ago Dec., 1932	One Year Ago March, 1932	Ten Years Ago March, 1923
Iron and Steel Composite	$28.35	$28.35	$28.31	$28.93	$29.61	$45.31
Finished Steel Composite	45.60	45.60	45.35	46.74	47.09	64.40
Steelworks Scrap Composite	6.46	6.41	6.33	6.41	7.94	23.80

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, tin plate, nails, sheets, plates, shapes, bars, and black pipe. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate pipe. Steelworks Scrap Composite:—Melting steel, compressed sheets.

COMPARATIVE PRICES OF IRON, STEEL AND COKE

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	March 11, 1933	Feb. 1933	Dec. 1932	Mar. 1932
Pig Iron				
Bessemer, del., Pittsburgh	$15.76	15.76	15.76	16.76
Basic, valley	14.00	14.00	14.00	15.00
Basic, eastern, del. eastern Pa.	13.50	13.50	13.50	16.00
No. 2 foundry, del. Pittsburgh	15.76	15.76	15.76	16.51
No. 2 foundry, Chicago	15.50	15.50	15.50	16.50
*Southern No. 2, Birmingham	11.00	11.00	11.00	11.00
**No. 2X, Virginia furnace	17.75	17.75	17.75	18.00
**No. 2 X, Eastern, del., Phila.	13.76	13.76	13.95	15.76
Malleable, valley	14.50	14.50	14.50	15.50
Malleable, Chicago	15.50	15.50	15.50	16.50
Lake Superior charcoal, del. Chi.	23.04	23.04	23.04	23.04
Gray forge, del. Pittsburgh	15.63	15.63	15.63	16.13
Ferromanganese, del. Pittsburgh	73.24	73.24	73.24	80.24

*1.75-2.25 silicon. For local delivery. Northern shipments based on $10, Birmingham. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

Coke				
Connellsville, furnace, ovens	1.75	1.75	1.75	2.25
Connellsville, foundry, ovens	2.25	2.50	2.50	3.25
Semifinished Material				
Sheet bars, open-hearth, Youngs.	26.00	26.00	26.00	26.00
Sheet bars, open-hearth, Pitts.	26.00	26.00	26.00	26.00
Billets, open-hearth, Pittsburgh	26.00	26.00	26.00	27.00
Wire rods, Pittsburgh	35.00	35.00	37.00	37.00

	March 11, 1933	Feb. 1933	Dec. 1932	Mar. 1932
Finished Material				
Steel bars, Pittsburgh	1.60	1.60	1.60	1.55
Steel bars, Chicago	1.70	1.70	1.70	1.70
Steel bars, Philadelphia	1.91	1.91	1.91	1.81
Iron bars, Chicago	1.65	1.65	1.65	1.70
Shapes, Pittsburgh	1.60	1.60	1.55	1.55
Shapes, Philadelphia	1.65	1.70	1.75	1.62
Shapes, Chicago	1.70	1.70	1.70	1.70
Tank plates, Pittsburgh	1.60	1.60	1.60	1.55
Tank plates, Philadelphia	1.59½	1.66	1.77	1.69½
Tank plates, Chicago	1.70	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.55	1.60	1.70	1.70
Sheets, No. 24, hot ann., Pitts.	2.00	2.00	2.10	2.20
Sheets, No. 24 galvan., Pitts.	2.60	2.50	2.85	2.80
Sheets, No. 10 blue anneal., Chi.	1.70	1.85	1.85	1.85
Sheets, No. 24 hot ann., Chicago	2.15	2.15	2.25	2.35
Sheets, No. 24 galvan., Chicago	2.75	2.75	2.90	3.00
Plain wire, Pittsburgh	2.10	2.10	2.20	2.20
Wire nails, Pittsburgh	1.85	1.85	1.95	1.95
Tin plate, per base box, Pitts.	4.25	4.25	4.25	4.75
Scrap				
Heavy melting steel, Pitts.	$8.75	8.35	8.70	10.25
Heavy melting steel, eastern Pa.	6.50	6.50	7.25	7.35
Heavy melting steel, Chicago	5.25	5.25	5.45	6.75
No. 1 wrought, eastern Pa.	6.50	6.50	7.25	9.00
No. 1 wrought, Chicago	5.00	5.00	5.05	6.25
Rails for rolling, Chicago	7.75	7.75	8.25	9.50

Sheets

New Prices Meet Approval and Change in Extras Is Announced —Buyers Seek to Cover Ahead

SHEET PRICES, PAGE 41

Cleveland—Spot orders for sheets are scarcer, but consumers are endeavoring to put through blanket orders against which they may specify in the second quarter, at present prices, if and when the material is required. Many are seeking protection, in the event of inflation, but mills are scrutinizing all such orders carefully, and are not booking beyond second quarter. This development is noted in other products as well as sheets. Automotive specifications in the past week were almost completely suspended, and sheet mills here and in nearby districts were practically idle. A quick recovery is expected to follow clarification of the bank situation. An oil company at Cleveland Friday embarked on a large buying program, including steel barrels.

Some makers have issued a new schedule of gage differentials applying to both hot and cold-rolled sheets. Under their former schedule No. 9-10 gage was base, and 5 cents per 100 pounds was added for each point increase in the gage, and 5 cents deducted for No. 8 gage and heavier. Under their new set up No. 10 and heavier are base. For No. 11-12 gage 5 cents is added, and for each point increase in the gage up to No. 16, 5 cents. The result is a reduction of 5 cents on some of the lighter gages. They also have consolidated hot and cold-rolled size extras which lower prices on some of the extremely wide sheets. Other makers are considering revisions, but have not formally issued lists.

Pittsburgh—The new base prices on important grades of sheets which were announced last week are meeting with approval, and while a full test has not yet been accorded due to their recent announcement, some business has been placed at the new prices, notably at 2.60c for galvanized sheets and 2.00c for No. 24 gage hot-rolled annealed. There has been no decision affecting the entire industry on changes in pricing autobody or furniture grades of full-finished sheets, and these classifications continue. The price of 2.30c for No. 20 gage cold-rolled appears to be meeting with favorable reception from automotive buyers, and as this represents an advance from the recent market of $1, and more, beneath this figure, the effect has been heartening that this price change will hold. Demand for practically all grades has undergone curtailment the past week to ten days due to shipment suspensions on the part of some customers and uncertainty which dominated the action of other buyers. No. 10 gage hot-rolled is quoted firmly at 1.40c, Pittsburgh, with No. 10 gage blue annealed 1.55c.

Cincinnati—The banking holiday created a lull in business of sheet mills, with bookings down sharply and no indication, by inquiries, that covering of needs to offset currency changes is imminent.

Chicago—Sheet business was curtailed sharply the past week, shipments being off over 50 per cent. Automotive requirements declined markedly, while miscellaneous consumers also curtailed purchases. Prices recently were announced effective immediately and on second quarter business, but producers reserve the right to advance quotations during the second quarter and it is believed that higher levels will be announced shortly.

St. Louis—Demand for sheets is the smallest in months, due largely to the suspension of banking. Consumers are disposed to await developments and no anticipation of inflation has yet developed.

Birmingham, Ala.—Readjustment of quotations on sheets has developed little business, and production is not encouraged to any extent.

CURRENT FINISHED STEEL PRICES

Delivered prices subject to freight surcharge corrected to nearest ½c. Asterisk denotes price change this week

Sheet Steel

HOT ROLLED No. 10
(24 to 48 inches wide)

Pittsburgh, base	1.40c
Chi. dist. mills	1.50c
Chicago, del.	1.55c
New York, del.	1.75c to 1.85c
*Birm., base	1.55c
Philadelphia, del.	1.71c to 1.81c

BLUE ANNEALED No. 9-10

Pittsburgh, base	1.55c
Chi. dist. mills	1.65c
Chicago, del.	1.70c
Phila., del.	1.86c to 1.96c
New York, del.	1.90c to 2.00c
St. Louis, del.	2.04c
*Birm., base	1.70c
San Fran., c.i.f.	2.32½c

HOT ROLLED ANNEALED No. 24

Pittsburgh, base	2.00c
Chi. dist. mills	2.10c
Chicago, del.	2.15c
New York, del.	2.30c to 2.35c
Phila., del.	2.26c to 2.31c
Birmingham, base	2.15c to 2.25c
St. Louis, del.	2.34c to 2.44c
San Fran., c.i.f.	2.85c
Detroit, del.	2.18½c

GALVANIZED No. 24

Pittsburgh, base	2.60c
Chi. dist. mills	2.70c
Chicago, del.	2.75c
Philadelphia, del.	2.91c
New York, del.	2.95c
*Birm., base	2.75c
St. Louis, del.	2.94c
San Fran., c.i.f.	3.50c

AUTOBODY No. 20

Pittsburgh, base	2.45c

FURNITURE

Pitts., No. 10 h'vy	2.40c to 2.50c
Pitts., No. 20 light	2.90c to 3.00c

TIN MILL BLACK No. 28

Pittsburgh, base	2.30c
Gary, base	2.40c
St. Louis, del.	2.59c

HEAVY COLD ROLLED No. 10

Pittsburgh, base	1.90c
Chi. dist. mills	2.00c
Chicago, del.	2.05c
Philadelphia, del.	2.11c to 2.16c
New York, del.	2.15c to 2.20c

COLD ROLLED No. 20

Pittsburgh, base	2.30c
Chi. dist. mills	2.40c
Chicago, del.	2.50c
Philadelphia, del.	2.56c to 2.61c
New York, del.	2.65c

Corrosion, Heat Resistant Alloys

Base, Pittsburgh

18% chrome, 8% nickel sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold Strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Steel Plates

Pittsburgh, base	1.60c
New York, del.	1.70c to 1.80c
Phila., del.	1.59½c to 1.69½c
Boston, del.	1.82c to 2.02c
Buffalo, del.	1.85½c
Chicago, base	1.70c
Cleveland, del.	1.78½c
Birmingham, base	1.75c
Coatesville, base	1.50c to 1.60c
Pacific Coast, c.i.f.	2.00c
St. Louis, del.	1.94c

Structural Shapes

Pittsburgh, base	1.60c
Philadelphia, del.	1.65c to 1.75c
New York, del.	1.77c to 1.87c
Boston, del.	1.90½c to 2.00½c
Chicago, base	1.70c
Cleveland, del.	1.78½c
Lackawan., base	1.70c
Birmingham, base	1.75c
Pacific Coast, c.i.f.	2.10c
Do., wide flange	2.20c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
Birmingham, base	1.75c
Lackawan., base	1.70c
Pacific Coast, c.i.f.	2.00c
Cleveland, base	1.65c
Philadelphia, del.	1.91c
New York, del.	1.95c
Boston, del.	2.02c
Pitts., cold finish	1.70c
Pitts., forg. qual.	1.75c and 1.85c
San Fran., c.i.f.	2.10c

RAIL STEEL

Pitts., Buff., Chi. St. Louis	1.50c
Eastern mills	1.30c

IRON

Chicago, base	1.60c to 1.65c
New York, del.	1.85c to 1.90c
Philadelphia, del.	1.81c to 1.86c
Pitts., refined	2.70c to 4.20c

REINFORCING

Billet, mill l'gths. Chi., Pitts., Buff.	1.40c
Do Cleveland	1.45c
Do Detroit	1.60c
Chicago, rail steel	1.30c
Phila., cut lengths	1.91c

Wire Products

(Prices apply on carload lots. Mixed carloads 10 cents higher with 10% discount off extras; joint carloads 10 cents higher with no discount from extras; pool carloads 20 cents up; less carloads 30 cents up.)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.85
Cement coated nails	1.85
Galvanized nails	3.35

(Per pound)

Polished staples	2.55c
Galvanized fence staples	2.80c
Barbed wire, gal.	2.35c
Annealed fence wire	2.25c
Galvanized wire	2.60c
Woven wire fencing (base column, c.l.)	$50.00

(To Manufacturing Trade)

Plain wire, 6-9 ga.	2.10c
Spring wire	3.10c

Chicago and Anderson, Ind., $1 over Pitts.-Cleve.; Duluth and Worcester, $2 higher; Fairfield, Ala., $3 higher.

Cold-Finished Bars, Shafting

Base Pitts., one size, shape, grade, shipment at one time to one destination

10,000 to 19,999 lbs.	1.70c
20,000 to 59,999 lbs.	1.65c
60,000 to 99,999 lbs.	1.60c
100,000 lbs. and over	1.57½c

Chicago, Cleveland, Buffalo 5c higher; Detroit, 20c; eastern Michigan 25c.

Tin and Terne Plate

Per 100-lb. box, Pittsburgh

Tin plate, coke base, contract	$4.25
Do., stock	3.75
Long ternes, No. 24 unassorted	2.75c

Gary base, 10 cents higher.

Alloy Steel

Hot rolled, f.o.b. Pittsburgh, Buffalo, Chicago and Massillon, O. Base 2.45c to 2.65c. Differentials to various classes of consumers.

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	3100	0.55
2100	0.55	3200	1.35
2300	1.50	3300	3.30
2500	2.25	3400	3.20
4100 .15 to .25 Mo.			0.50
4600 .20 to .30 Mo. 1.25-1.75 Ni.			1.05
5100 .80-1.10 Cr.			0.45
5100 Cr. spring			0.20
6100 bars			1.20
6100 spring			0.95
Cr., Ni., Van.			1.50
Carbon van.			0.95
9250 (flats)			0.25
9250 (rds., sq.)			0.50

Strip, Hoops, Bands

Hot-rolled strip up to 23 15/16-in. wide, Pitts.	1.45c
Do., Chicago	1.55c
Do., del. Phila.	1.76c
Do., del. N. Y.	1.80c
Cooperage hoop, Pittsburgh	1.55c to 1.60c
Do., Chicago	1.65c to 1.70c
*Cold roll. strip, Pitts., Cleve.	1.90c to 2.00c
Worcester, 3 tons or over	2.10c

Rails, Track Material

Stand. rails, mill	$40.00
Relaying rails, Pitts., 20-45 lbs.	$20.00 to 22.00
50 to 75	$16.00 to 18.00
80 to 100	$20.00 to 21.00
Light rails, 25-45, mills	$30.00
Light rails, Chi.	$32.00
Angle bars, mills	2.55c
*Spikes, R.R., mills	2.15c
Spikes, boat, b'ge, Pitts.	2.65c
Track bolts, Chi.	3.50c
Do., stand., job.	73 off list
Tie plates, Pitts.	$35.00
Tie plates, Chi.	$35.00

Rivets, Wrought Washers

Struc., c.l., Pitts.-Cleve.	2.25c
Struc., c.l., Chi.	2.35c
7/16-in. & smaller, Pitts., Chi., Cleve.	70, 10 and 10 off
Washers, c.l., Pitts. dist.	6.50 to 6.75 off
Do., Chi. dist.	7.00 to 6.75 off

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to Dec. 1, 1932, lists.

CARRIAGE BOLTS

All sizes, cut thread	75 off
Rolled thread ½ x 6 and smaller	75 off
Eagle list	75 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 75 off
Tire bolts ..... 60 and 10 off
Stove bolts, 75, 25 and 10 off in pkgs.; 86 off in bulk, 5000 or more of a size.
Rolled thread machine bolts, ½ x 6 and smaller 75 off.

NUTS

Semifinished	75 off

HEXAGON CAP SCREWS

Milled	80-25 off
Upset 1-in. diam., smaller	80-25-10 off

SQUARE HEAD SET SCREWS

Upset, 1-in., smaller	75-10-10 off
Headless set screws	75-10 off
Upset, larger than 1-in.	75-10 off

Cut Nails, Piling

Cut nails, c.l., Pitts.	$2.50
Do., less carloads, 5 kegs or over	$2.90
Less than 5 kegs	$3.05
Steel sheet piling, Pitts.	1.90c

Pipe and Tubing

Base $200 net ton, except on standard commercial seamless boiler tubes under 2 inches and cold drawn seamless tubing.

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pittsburgh and Lorain, O., to consumers in carloads, Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago delivered, 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

In.	Steel Blk.	Steel Gal.
¼ and ⅜	57	34
½	62	49½
¾	65½	55
1—3	67½	57
Iron		
½	28	10½
¾	33	16½
1—1¼	36	20½
2	38	21

LAP WELD

	Steel	
2	61	50½
2½ to 6	64½	54
8	62	51
10	60	49
12	59	48
Iron		
2	26	12½
2½—3½	33	18½
4—6	35	22
7—8	34	21½
9—12	31	16½

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STEEL LINE PIPE

Steel

2 to 3 butt	66⅔
2 lap	60
10 lap	59

Iron

2½ to 6 lap	62½
8 lap	61
12 lap	58

Discounts on steel and iron pipe are net.

BOILER TUBES

Carload discounts, f.o.b. Pittsburgh

Lap Welded Steel		*Charcoal Iron*	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1⅛	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Quantity discounts same as for hot rolled, below. Charcoal Iron—Under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Quantity discounts are: Under 10,000 pounds, 10 points and 5 per cent; 10,000 to 24,999 pounds, 6 points and 5 per cent; 25,000 pounds to carload, 2 points and 5 and 5 per cent; carload and over, base discount and 5 and 5 per cent. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft...55%
Selected lengths, 1—18 ft....53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

6-in. & over, Birm.	$32.00-33.00
4-in. Birm.	35.00-36.00
4-in. Chicago	43.40-44.40
6 to 24-in. Chicago	40.40-41.40
6-in. & over, N. Y.	32.00-34.50
4-in. New York	34.50-36.50

Class A pipe $3 higher than Class B.

Stand. fitgs., Birm. base...$90.00

Six to 24-inch, fittings, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

RAW MATERIAL PRICES

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4, 1932. Asterisk denotes price change this week

Pig Iron

Per Gross Ton

FOUNDRY, No. 2

Chicago, furnace	$15.50
Pitts., dist. fur.	15.00
Pittsburgh, del.	15.63-16.13
Valley furnace	14.50-15.00
Cleve. fur., local del.	15.00
Philadelphia, del.	13.26-13.76
Virginia furnace	17.25
Granite City, Ill.	16.50-17.00
Buff., fur., local del.	16.00
Buff., all-rail, Bost.	18.91-19.91
Do, Brooklyn	18.90
Do, Newark	17.28
Ala., Bir. fur., local	11.00
Ala., Nor. del., Bir.	10.00
Ala., del. Chicago	16.01
Ala., del. St. Louis	14.42
Ala., del. Cincinnati	13.82
Ala., Phila., dock del.	15.00-15.25
Ala., Balt., dock del.	15.00
Ala., N. Y. dock	15.50
Ala., Bost. dock del.	15.75-16.75
Tenn., Bir. base	13.00
Tenn., del. Cinci.	13.82
Montreal, del.	23.00-23.50
Toronto, del.	22.10

FOUNDRY, No. 2X

Buff., fur., local del.	16.50
Buff., all-rail, Brook.	19.40
Do, Newark	17.78
Buff., all-rail, Bost.	19.91-20.91
Virginia furnace	17.75
Eastern, del. Phila.	13.76-14.26

FOUNDRY, No. 1X

Buff. fur., loc. del.	17.50
Eastern, del. Phila.	14.26-14.76

MALLEABLE

Valley furnace	14.50-15.00
Cleve. fur., loc. del.	15.00
Pittsburgh dis. fur.	15.00
Pittsburgh, del.	15.63-16.13
Chicago, furnace	15.50
Buff., fur., loc. del.	16.50
Eastern Pa., del.	14.63-18.91
Granite City, fur.	16.50-17.50
Montreal, del.	24.00
Toronto, delivered	22.60

BASIC

Pitts., dist. fur.	14.00
Pittsburgh, del.	14.63-15.13
Eastern, Pa., del.	13.50
Buff. fur., loc. del.	15.50-16.00
Montreal, del.	23.50
Valley, furnace	14.00

BESSEMER

Valley furnace	14.50-15.00
Pittsburgh fur	15.00
Pittsburgh, del.	15.63-16.13

LOW PHOS.

Valley, fur, stand.	25.00
Phila., standard	22.76-25.79
Copper bear., E. Pa. furnace	20.50-21.50

GRAY FORGE

Valley furnace	14.00
Pitts. dist. fur.	15.00
Pittsburgh, del.	15.63-16.13

CHARCOAL

Lake Sup., del. Chi.	23.04

SILVERY

Jackson County, O., fur 6%—$18.00; 7—$18.50; 8—$18.75; 9—$19; 10—$19.50; 11—$20; 12—$20.50; 13—$21.50; 14—$22.50; 15—$23; 16—$24; 17—$25.50.

Pittsburgh and Buffalo furnace: 7 to 10—$19; 15—$21 to $23.

BESSEMER FERROSILICON

Jackson County, O., fur., 10%—$20.50; 11—$21; 12—$21.50; 13—$22.50; 14—$23.50; 15—$24; 16—$25; 17—$26.50.

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bess.	$4.80
Mesabi bessemer	4.65
Old range nonbess.	4.65
Mesabi nonbess.	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania, New Jersey furnaces (Nominal)

Foundry and basic, 56-63%, contract	7.50
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports (Nominal)

Foreign manganiferous ore, 45-55% iron, 6-10% man.	8.00
No. Afr. low phos.	7.00
Swedish basic, 65%	7.50- 8.00
Swedish low phos.	8.00
Spanish, No. Afr. basic, 50 to 60%	7.00
*Tungsten, spot, sh. ton unit, duty pd.	$9.65- 9.90
Newfoundland fdy., 55%	7.00
Chrome ore, 48% gross ton c.i.f.	$15.50-16.50

Manganese Ore

(Nominal)

Prices, not including duty, cents per unit, cargo lots.

Caucasian, 52-55%	nominal
So. African, 52%	18 to 19 cts.
So. Afr., 49-51%	nominal
So. Afr., 44-47%	nominal
Indian, 48-50%	nominal
Brazilian, 46-48%	17 cts.

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pa., Ohio, Ill., Ky., Md., Ga., Ala.	$35.00
Missouri	32.00

Second Quality

Pa., Ohio, Ill., Ky., Md.	25.00-30.00
Missouri	26.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	$35.00
Joliet, E. Chicago	47.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

Burned, 9 x 4½ x 2½	$61.50
Unburned, 9 x 4½ x 2½	52.00

CHROME BRICK

Per Net Ton

F.o.b. ship. point	$42.50

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	38.00
Domes, Chewelah, Wash., base	20.90

Fluorspar

85 to 5 per cent grade

Washed gravel, f.o.b. Ill., Ky., net ton, carloads	$10.50
Washed gravel, import duty paid tide, gross ton	16.50

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pitts., Chi., Cleve., open-hth. & bess.	$26.00
Philadelphia	31.75
Forging, Pitts., Chi.	31.00

SHEET BARS

Pitts., Cleve., Yong.	26.00
Chicago	28.00

SLABS

Pitts., Cleve., Yong.	26.00

WIRE RODS

Pitts., Cleveland	$35.00
Chicago	36.00

SKELP

All grades, Pitts.	1.50c-1.60c

Coke

Prices Per Net Ton

BEEHIVE OVENS

Connellsville fur.	$1.75
Connellsville fdry.	2.25- 2.50
‡Connell. prem. fdry.	4.00
New River fdry.	6.00
Wise county fdry.	4.25- 5.00
Wise county fur.	3.50- 4.25

BY-PRODUCT FOUNDRY

Newark, N. J., del.	8.21- 8.81
Chi. ov., outside del.	7.00
Chicago, del.	7.75
New England, del.	10.00
St. Louis, del.	7.75
Birmingham, ovens	4.00
Indianapolis, del.	7.75
Ashland, Ky., ovens, Connell., basis	4.50
Portsmouth, ovens Connell. basis	4.50
Buffalo, ovens	7.50- 8.00
Detroit, ovens	8.00
Philadelphia, del.	8.50

Ferroalloys

(In dollars, except Ferrochrome)

Ferromanganese, 78-82% tidewater, duty pd. (con.)	$68.00
do., (spot)	61.00
Ferromanganese, del. Pitts., (con.)	73.24
do (spot)	66.24
Spiegeleisen, 19-20%, dom. fur., spot†	24.00
Ferrosilicon, 50%, freight all., c. l.	74.50
Do, less carload	82.50
Do, 75 per cent	120-130.00
Spot, $5 a ton higher.	
Silicomang., 2½ carb.	85.00
2% carbon	90.00
1% carbon	100.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. con. del.	9.50
Do, spot del.	10.00
Ferrotungsten, stand., lb. cont.	0.94- 1.00
Ferrovanadium, 35 to 40%, lb. cont., on analysis	2.60- 2.80
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton	9.00
Ferrophosphorus, per ton, c. l. 17-19%, Rockdale, Tenn., basis; 18%, $2 unitage	50.00

†Carloads. Diff. to apply to quantity.

Bars

Demand Deeply Cut by Bank Suspensions—Prices Meet No Test and Remain Steady

BAR PRICES, PAGE 41

Chicago—Steel bar demand tended downward the past week after being fairly well sustained for several days as a result of orders placed over the week-end. Automotive shipments are especially affected and miscellaneous consumers are marking time pending clarification of the banking situation. In most cases mills are selling to consumers with an established credit, but some caution is noted in business transactions. Buyers also have been able to establish credit for payment of freight although smaller interests who had been required to make freight payments within 48 hours are experiencing some inconvenience. Producers have not announced second quarter prices, due principally to the fact that interest in forward requirements has been light. The market recently has been 1.70c, Chicago, for soft steel bars, 1.50c for rail steel, and 1.60c for bar iron.

Pittsburgh—The merchant bar market continues untested and 1.60c base, Pittsburgh, is nominal. One exception recently was an order for two sizes of carbon steel rounds aggregating over 700 tons reported to have brought the full market price. The order was conspicuous in view of light recent merchant bar buying. Most automotive accounts withheld shipments on bar orders, beginning early last week. The alloy base price is firm at 2.65c, mills, for small lots and 2.45c for large tonnages.

Cleveland—Demand for commercial bars is restricted mainly to smaller, miscellaneous manufacturing interests, with a sharp reduction in specifications from the automotive industry. Consumers in need of material have had little difficulty in obtaining it on satisfactory credit arrangements. Commercial steel bars are steady at 1.65c, base, Cleveland.

New York—Commercial steel bars are among the steadiest of steel products at 1.60c, Pittsburgh, although volume is light.

Cold-Finished Price Holds Into Second Quarter

Cold Finished Prices, Page 41

Pittsburgh—Books are now open for second quarter in cold-finished steel bars. The price is reaffirmed at 1.70c, Pittsburgh, for 5 to 10-ton lots. Specifications have declined the past week and curtailment by consumers has reduced shipments on old business.

Tin Plate Rate Declines; Japan Seeks 1000 Tons

Tin Plate Prices, Page 41

Pittsburgh—Specifications for late April and May shipment are expected by tin mill producers up to and including March 15. Therefore, this week will see the appearance of tonnage by which canmakers will gage canners' requirements for early spring. The outlook is not encouraging in view of the poor financial condition among most small canners, although can makers still are holding tin plate inventories to a minimum and almost any change will be reflected in immediate specifications. Tin mill operations last week were down almost 10 points to 35-40 per cent. The outlook as of late last week points to a further weakening to about 30 per cent. Prices on tin mill products hold.

New York—Japan is inquiring for 1000 tons of tin plate and 500 tons of wasters, specifying early shipment.

Plates

Dry Dock Taking 2000 Tons Is Most Notable Project—Barge Buying Appears Imminent

PLATE PRICES, PAGE 41

Pittsburgh—About 2000 tons of plates will be purchased for a floating dry dock for the United States navy on which Dravo Contracting Co., was announced as low bidder March 9. This dry dock will be 361 x 60 x 34 feet and attracted some unusual bids. The low bid was $278,200 or approximately $81,000 under the second bid, by the Pusey & Jones Corp., Wilmington, Del., whereas the high bid was $522,195, by the Berg Shipbuilding Co., Seattle, for San Diego, Calif., delivery. The dry dock was bid to be delivered to any one of important eastern seaboard ports. Prospects for barge orders are favorable because oil and gasoline concerns are seeking oil barges already built. The plate market otherwise is quiet with mill specifications for small lots somewhat less the past week. The second-quarter price is being quoted 1.60c for those asking protection for that time. An order for 240 tons of plates for pontoons for Vicksburg, Miss., engineers went to a Decatur, Ill., shop recently.

Boston—Plate business is in small lots, large consumers ordering only as required. Prices are untested.

New York—Temporary drop in the already light inquiry is noted in plates. There have been no cancellations. Some small orders are being taken on a spread of 1.45c to 1.60c, Coatesville, Pa. For treasury building vaults at Washington 513 tons have been placed.

Philadelphia—Bookings of plates are somewhat better than of other steel products at a usual range of 1.50c to 1.60c, Coatesville, Pa. On large tonnages marked concessions have been made.

Cleveland—Though platemakers have not officially opened books for second quarter, it is indicated 1.60c, base, Pittsburgh, will be reaffirmed. Several northern Ohio municipalities have plans for building water tanks, but inquiries have not been issued. Current business is restricted to small lots, with volume lower than in recent weeks.

Contracts Placed

513 tons, vaults, treasury building, Washington, to McClintic-Marshall Corp., Bethlehem, Pa.; John W. Cowper Co. Inc., Washington, general contractor.

240 tons, pontoons for Vicksburg, Miss., engineers, to Mississippi Valley Structural Steel Co., Decatur, Ill.

125 tons, steel tank barge 120 x 30 x 7 feet, to Dravo Contracting Co., Neville Island, Pittsburgh.

Contracts Pending

2000 tons, floating dry dock 361 x 60 x 33.6 feet, for the United States navy; Dravo Contracting Co., Neville Island, Pittsburgh, low at $278,200.

850 tons, 60-inch welded steel pipe, Irvington tunnel, Hetch Hetchy project, San Francisco went reinforced concrete pipe, steel lined.

Unstated tonnage, 20,000-gallon-tank on 70-foot tower, Rio Vista, Calif.; Chicago Bridge & Iron Works, Chicago, low.

Unstated tonnage, one steel suction pontoon, 65 x 16 x 3½ feet, United States engineer, Rock Island, Ill; bids in.

Strip

Pittsburgh Makers Operate on Orders for Needed Supplies—Chicago Production Low

STRIP PRICES, PAGE 41

Pittsburgh—Late last week the two independent strip producers in this district began operations after two weeks idleness. This was done to accomplish production on some needed tonnage which some customers are demanding regardless of banking restrictions. Several large automotive accounts have held up releases of strip tonnage. Hot-rolled inquiries for second quarter have been quoted 1.45c, base, Pittsburgh, the present market. Some small lots of cold-rolled have been quoted for second quarter at 2.00c, Pittsburgh, but much cold-rolled strip tonnage is moving at 1.90c, Pittsburgh.

New York—Strip buyers are awaiting developments although some small business in hot and cold-rolled is being done with prices steady at 2.00c, Pittsburgh, for cold and 1.45c for hot-rolled.

Cleveland—Strip specifications and shipments are being held up pending the outcome of efforts to steady the banking situation. Releases from automotive consumers have been promised "as soon as possible." No new buying is noted. Mills in this district were practically idle during the week.

Chicago—Suspension of shipments against contracts and a decline in new business reduced activity in the strip market materially during the past week. A decline was noted in requirements of small buyers as well as the automotive industry, although resumption of banking operations is expected to release considerable tonnage. Mill operations averaged no more than 10 per cent. Prices are fairly well maintained at 1.55c, Chicago, for hot strip and 1.90c to 2.00c, Pittsburgh-Cleveland, for cold-rolled strip. Announcement of second quarter prices is deferred.

Steel Rate Falls to 13.5 As Holdups Cut Demand

Pittsburgh—Steel operations declined one point to 14 per cent last week. This week a lower rate is forecast, but probably not below 12-13. Operating schedules for this week were difficult to determine late last week. The leading interest here operated through March 9 at 16 per cent. Rates in two small independent mills hold unchanged, with two open hearths on apiece. Strip rolling schedules increased the latter part of the week when two independent mills went on. Eight out of 53 steelworks blast furnaces are blowing.

Philadelphia—Eastern steelmaking operations continued last week at 10 per cent, with indications of a drop to 8 or 9 per cent this week unless holdups are rescinded.

Youngstown, O.—Steel output here in the week ended March 11 was up a point to 17 per cent, but was expected to sag this week to 15. Carnegie's Ohio works is scheduled to suspend Tuesday. Unless conclusion of the bank holiday stimulates releases, production will be under 15 by the end of the week, but probably averaging that figure.

Buffalo—Steelmaking operations here dropped to 16 per cent in the week ended March 11, and a further decline to 12 per cent is probable this week. Two open hearths were taken off over the week-end.

Cleveland—Steel ingot production here for the week ended March 11 was at 20 per cent, one point lower than in the week preceding. Corrigan, McKinney Steel Co. and American Steel & Wire Co. each operated three open hearths, and the Otis Steel Co. one. The Corrigan, McKinney company reduced the number of its active blast furnace from two to one. The American company operated its bessemer converter, idle for several weeks. Sheet and strip mills in this district were practically idle during the week. Further moderation in ingot production here may occur this week, though schedules have not been determined.

Chicago—Steelmaking operations were curtailed sharply the past week, ingot production declining from 16 per cent to around 12. Six of 36 steelworks blast furnaces continue in blast. Finishing mill operations were irregular with the tendency downward.

Birmingham, Ala.—The ingot rate held at 15 per cent during the past week. An increase is expected before the end of the month.

Operating Rate of the Steel Industry, by Weeks

All figures except the monthly open-hearth and bessemer ingot totals of American Iron and Steel institute are percentages. Estimates are based upon weekly reports from the Pittsburgh, Chicago, Youngstown, eastern Pennsylvania, Cleveland, Birmingham, Ala., and Buffalo districts, which are weighted. Weeks end Saturday.

1932	1st Week	2nd Week	3rd Week	4th Week	5th Week	Steel's Average	Institute's Monthly Total tons	Institute's Monthly Average
Jan.	22	25	26	27	28.5	25.7	1,459,450	25.9
Feb.	28.5	27	25	25	....	26.4	1,457,710	26.9
March	25	25.5	24.5	23	....	24.5	1,409,054	24.1
April	23	22	22	23	24	22.8	1,238,250	22.0
May	24	24	25.5	23	....	24.1	1,106,030	19.7
June	21	17	17	17	....	18.0	897,275	15.9
July	14.5	12	15.5	16.5	16.5	15.0	792,533	14.6
Aug.	14.5	14.5	15.5	14.5	....	14.7	832,402	14.2
Sept.	13.5	15.5	15	17	....	15.3	975,061	17.3
Oct.	18	19	19.5	19.5	19.5	19.1	1,068,550	19.0
Nov.	21	21	19	17.5	....	19.6	1,014,794	18.0
Dec.	16	15	14	12	13	14.0	844,618	15.0
1933								
Jan.	15.5	17	18	19	....	17.4	1,006,297	17.7
Feb.	19	19	19	17	....	18.5	1,065,080	20.39
March	15	13.5	....	....	....	....	.....	....

Bolt, Nut Prices Steady For Second Quarter

Bolt, Nut, Rivet Prices, Page 41

Credit restrictions have caused a sharp drop in orders for bolts, nuts and rivets the past week, though March buying had been proceeding at the February rate. Second-quarter books are about to open with prices probably unchanged, at 75 off for bolts and nuts and 2.25c, Pittsburgh, for large rivets. Automotive users have almost ceased releasing specifications and orders from general users are smaller. Production has been sharply cut.

Link-Belt Co., 300 West Pershing road, Chicago, has acquired the patent rights for the manufacture and sale in the United States of the Simon-Carves dust extraction and collecting system for use in cleaning coal. About 20 installations have been made in England.

Railroads

Pennsylvania Inquires Second Quarter 10-15,000 Tons

Railroad Prices, Page 41

Inquiries have been issued by the Pennsylvania covering practically all its miscellaneous steel requirements for second quarter, involving 10,000 to 15,000 tons. Bids on these inquiries will be opened April 12.

Buying of steel by railroads, in rails, fastenings and miscellaneous forms, has dwindled, though shipments of fastenings and steel for repairs continue on orders already booked. While no rail buying is being done now some tonnages are expected to be placed during March.

Except for the new mill base of 2.15c on railroad spikes prices have not been changed. Tie plates are $35 per ton and angle bars 2.55c.

Air conditioning equipment for six cars have been placed by the Chesapeake & Ohio. United States Steel Products Co. is low on 50 car wheels for Panama. An order for 800 tons of light rails has been placed in the east, part for export. Witherow Steel Corp., division of the Republic Steel Corp., Youngstown, O., resumed operations last week at its Pittsburgh mill on a grouping of small orders for railroad steel products.

Car Orders Placed

Missouri-Kansas-Texas, four lounge cars to American Car & Foundry Co.

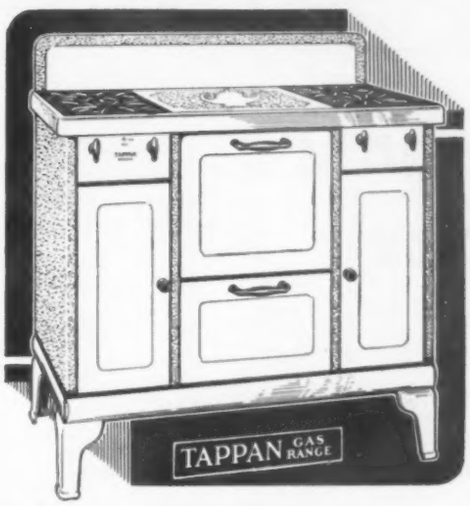
Locomotives Placed

Delaware, Lackawanna & Western, two 660-horsepower diesel locomotives, one to American Locomotive Co., one to Ingersoll-Rand Co., subject to trial and approval.

Rail Orders Placed

Bangor & Aroostook, 1780 tons, 100-pound rails to Bethlehem Steel Co., Bethlehem, Pa.; track accesories placed with the same and other companies.

E. F. Houghton & Co., with plants in Philadelphia, Chicago and Detroit announce they will manufacture and sell products formerly made by Weaver Bros. Co., Cleveland. J. C. Weaver, formerly vice president of the Weaver company, is now manager of the cleaner and pickling products department for the Houghton company. The Weaver products include pickling inhibitors, pickle pills for testing strength of acid and alkaline solutions, a plastic, acid-resisting lining for tanks and other specialties.



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Structural Shapes

Awards Are Heavier, with 5000 Tons Placed for St. Paul Postoffice; Steel Corp. Subsidiary Low for San Francisco Bridge Requiring 120,000 Tons

STRUCTURAL SHAPE PRICES, PAGE 41

Pittsburgh—Fabrication of a large part of the steel for the west and east superstructures of the San Francisco-Oakland bridge is expected to be done in this district following word late last week that a subsidiary of the United States Steel Corp. was low for both contracts. The structural steel will amount to approximately 120,000 tons. Plain material continues 1.60c, base, Pittsburgh.

Chicago—River work has been outstanding in recent structural activity, nearly 3500 tons of piling having been placed for dams in Kentucky and a breakwater at Peoria, Ill. For the St. Paul postoffice 5000 tons of shapes have been placed. Larger inquiries also represent public work and include 6500 tons for a St. Louis federal building, and 1000 tons for a postoffice at Ft. Worth, Tex.

Boston—Structural awards for the week total about 500 tons. New inquiry is light.

New York—While bids on the 16,000-ton Hartford, Conn., bridge are in, the work will be subject to delay for legislative action. Buying and inquiry is light, although 1925 tons for a New York state hospital were placed. Prices are unchanged.

Philadelphia—Shape demand is at the lowest point in many months, with the price unchanged at 1.60c, base, nearest mill.

Cleveland—Bids for several state bridges requiring approximately 250 tons of shapes have been postponed because of inability of contractors to submit certified checks. One or two private projects in Cleveland taking fairly substantial tonnages have been delayed, but at least four private jobs which require 50 tons or less each were awarded. Plain material is steady at 1.60c, base, Pittsburgh.

Contracts Placed

5000 tons, postoffice, St. Paul, to McClintic-Marshall Carp., Bethlehem, Pa.

2100 tons, piling, Barren river dam, Bowling Green, Ky., to Carnegie Steel Co., Pittsburgh.

1925 tons, Gowanda state hospital, Helmuth, N. Y., to McClintic-Marshall Corp., Bethlehem, Pa.; C. F. Heglin & Sons Co. Inc.—Winston Bros. Co. Inc., Minneapolis, general contractors.

1250 tons, plant in Detroit for Rotary Electric Steel Co. (Michigan), to R. C. Mahon Co., Detroit.

1200 tons, mainly castings, vaults in treasury building, Washington, to Bartlett-Hayward Co., Baltimore; John W. Cowper Co. Inc., Washington, general contractor.

800 tons, piling, Green river dam, Brownsville, Ky., to Carnegie Steel Co., Pittsburgh.

710 tons, state bridge, between Charlotte and Gastonia, N. C., to McClintic-Marshall Corp., Bethlehem, Pa.; J. S. Bowers, Whiteville, N. C., general contractor.

550 tons, building, Women's National Republican club, New York, to Bethlehem Fabricators Inc., Bethlehem, Pa.

500 tons, piling, breakwater, United States boatyards, Peoria, Ill., to Carnegie Steel Co., Pittsburgh.

350 tons, postoffice, Tyler, Tex., to McClintic-Marshall Corp., Bethlehem, Pa.

300 tons, high school, Yeadon, Pa., to Robinson Iron & Steel Co., Philadelphia.

265 tons, addition to naval war college, Newport, R. I., to Pittsburgh Bridge & Iron Works, Pittsburgh; Ferro Concrete Construction Co., Cincinnati, general contractor. Project also takes 47 tons of concrete bars.

250 tons, bridge, Walsenburg, Colo., to Midwest Steel & Iron Works Co., Denver.

175 tons, postoffice, Daytona Beach, Fla., to W. M. White Steel Construction Co.; Otto Misch Co., Detroit, general contractor.

175 tons, bridge, Pennsylvania railroad, Norristown, Pa., to Phoenix Bridge Co., Phoenixville, Pa.

160 tons, highway bridge, Lothair, Md., to Shippers' Carline Inc., Milton, Pa.

125 tons, bridge, Waterloo, Iowa, to unstated bidder.

120 tons, state bridge, Webster-Oxford, Mass., to Boston Bridge Works, Cambridge, Mass.; C. & R. Construction Co., Boston, general contractor.

100 tons, bridge, Elk county, Pennsylvania, to Lackawanna Steel Construction Corp., Buffalo.

Unstated tonnage, shapes and plates, Panama, bids of Feb. 17; Bethlehem Steel Export Co., shapes, $3179.23; Central Iron & Steel Co., Harrisburg, Pa., plates, $1392.24.

Shape Awards Compared

	Tons
Week ended March 11	16,055
Week ended, March 4	9,805
Week ended Feb. 25	5,347
This week in 1932	6,277
Average weekly, 1932	14,285
Average weekly, 1933	9,792
Average weekly, Feb.	12,320
Total to date, 1932	153,246
Total to date, 1933	107,717

Contracts Pending

6500 tons, federal building, St. Louis; bids April 4.

1000 tons, postoffice, Ft. Worth, Tex.

900 tons, viaduct, route 29, section 10B, Newark, N. J.; P. T. Cox Co., low on bids March 6.

800 tons, bridge, Milford, N. J.; bids March 18 to state highway department.

750 tons, brewery buildings, Woodhaven, Long Island, N. Y.

700 tons, appraisers' stores, Baltimore; Pike & Cook, Minneapolis, general contractors.

673 tons, state bridges, Pennsylvania; bids March 31.

500 tons, postoffice, Phoenix, Ariz.

350 tons, shapes and bars, cell block and utility buildings, United States Southwestern reformatory, El Reno, Okla.; bids April 5.

300 tons, printing plant, Wilson-Jones Co., Chicago and New York, at Elizabeth, N. J.; Leo F. Caproni, consulting engineer, New Haven, Conn.; bids about April 15.

300 tons, postoffice addition, Jersey City, N. J.; general contract revoked, bond not acceptable.

250 tons, balloon hangar at naval air station, Sunnyvale, Calif., Dinwiddie Construction Co., San Francisco, awarded general contract, $73,750.

225 tons, bascule bridges, Dismal Swamp canal, Deep Creek, Va., and South Mills, N. C., United States engineer, Norfolk; bids March 22.

200 tons, piling, Mill creek sewer, Cincinnati; general contract to Winston Bros. Co. Inc., Minneapolis.

154 tons, arch webb steel piling, department of commerce, lighthouse service, Milwaukee, for delivery to Frankfort, Mich.; Jones & Laughlin Steel Corp., Pittsburgh, low, 5-inch, $6193.10, f.o.b. mill; Carnegie Steel Co., low, 6-inch, $7916.26.

100 tons, shapes and bars, postoffice, Springfield, Vt.; Thompson & Son Inc., New York, low.

100 tons, shapes and bars, postoffice, Malone, N. Y.; bids in.

Unstated tonnage, addition, postoffice, Schenectady, N. Y.; bids March 23.

Unstated tonnage, piling, structurals and miscellaneous material, navy, Jones & Laughlin Steel Corp., Pittsburgh, low, $15,216.13; bids of Feb. 28.

Foreign Ferromanganese Still Affects Market

Ferroalloy Prices, Page 42

Ferromanganese continues quoted at $61, duty paid seaboard, for spot orders, with contracts carried over at $68. Domestic sellers are meeting the foreign price, but as there is a stock of foreign ferromanganese on the eastern seaboard they have not as yet clarified the unsatisfactory price situation. Spiegeleisen is unchanged.

Blaw-Knox Co., Blawnox, Pa., reports loss of $671,965 for 1932, compared with net income of $750,519 for 1931.

Concrete Bars

Tonnage Increases, Topped By 1700 for Washington Treasury Vault, and 1100 For Lexington Narcotic Center—New Buying Is Light, Prices Unchanged

REINFORCING BAR PRICES, PAGE 41

Chicago—Outstanding in the reinforcing bar market is construction for the federal narcotic center near Lexington, Ky., for which 1100 tons of bars have been placed. Inquiry generally is slow. The general market continues 1.40c, base, for mill shipments of billet bars, and 1.55c for lots of 5 tons and more out of warehouse. Rail steel bars are 1.30c for mill and warehouse shipments, with both grades 15 cents per 100 pounds higher on lots of less than 5 tons.

New York—The 1.40c, Pittsburgh, price on billet steel reinforcing bars has not been tested here. On several thousand tons previously negotiated, 1.30c and less were done. For vaults, treasury building, Washington, 1725 tons have been placed.

Philadelphia—Despite the bank holiday demand for concrete bars, especially from jobbers, has shown a slight increase. Prices are steady.

Pittsburgh—Mill shipments of new billet steel continued uninterrupted last week, but inquiries and orders were lacking. The bar price is firm at 1.40c, Pittsburgh, for mill lengths, with 1.55c, Pittsburgh, for cut lengths. Bids on the San Francisco-Oakland bridge submitted last week call for an estimate of 20,000 tons of reinforcing steel in bar, mesh and interlocking flooring forms.

Cleveland—Practically all projects requiring concrete bars are in abeyance. State road awards scheduled for March 10, to take 200 tons of bars, have been postponed indefinitely. The leading maker here continues to quote new billet steel bars, mill lengths, at 1.40c to 1.50c, base, mill.

Boston—The usual spring highway and bridge programs have not developed actively, although such inquiry is expected later.

Contracts Placed

1725 tons, vaults, treasury building, Washington, to Kalman Steel Corp., Bethlehem, Pa.; John W. Cowper Co. Inc., Washington, general contractor.

1100 tons, building, federal narcotic center, Lexington, Ky., to Knoxville Iron Co., Knoxville, Tenn.

900 tons, naval hospital, Philadelphia, to Concrete Steel Co., Philadelphia.

570 tons, state bridge over San Gabriel river, Los Angeles county, California., to unnamed interest.

400 tons, bridge, Mountain creek and relief bridges between Oak Cliff and Dallas-Tarrant county line, Texas, to Austin Bros., Dallas; T. H. Johnson, Dallas, general contractor.

250 tons, prison, Woodburne, N. Y., to Joseph T. Ryerson & Son Inc., New York; previously reported to Concrete Steel Co., New York.

125 tons, junior high school, Normandy, Mo., to Koerner Engineering Co., St. Louis; Woermann Construction Co., Normandy, general contractor. Atlas Iron Works, St. Louis, awarded 31 tons of shapes.

120 tons, bridge, Delaware City, Del., to Kalman Steel Corp., Bethlehem, Pa.

110 tons, postoffice, Reno, Nev., to Sheffield Steel Corp., Kansas City, Mo.; McDonald Engineering Co., Chicago, general contractor.

100 tons, state highway bridge, Montgomery county, Indiana, to W. J. Holliday Co., Indianapolis; E. F. Smith, Indianapolis, contractor.

100 tons, bars and shapes, postoffice, Oregon City, Oreg.; bars to Campbell Engineering Co., Tacoma, Wash.; shapes to Poole & McGonigle, Portland, Oreg.; Dougan-Hammond Construction Co., Portland, general contractor.

Contracts Pending

1900 tons, contract No. 2, San Francisco-Oakland, Calif., bridge; Transbay Bridge Construction Co., San Francisco, low for general contract.

1230 tons, sewer, southwest outlet section C2, Louisville, Ky.; bids March 16.

1140 tons, contracts No. 4 and 4-A, San Francisco-Oakland, Calif., bridge; bids postponed until after bank holiday.

714 tons, viaduct, route 29, section 10B, Newark, N. J.; P. T. Cox Co., New York, low on bids March 6.

700 tons, federal building, San Francisco; N. P. Severin Co., Chicago., low for general contract.

400 tons, Mill creek sewer, Cincinnati; general contract to Winston Bros. Co. Inc., Minneapolis.

100 tons, postoffice, Cambridge, Mass.; bids March 28.

330 tons, postoffice, San Jose, Calif.; general contract to W. J. Ochs, San Jose.

300 tons, incinerators for New York.

269 tons, state road paving in San Francisco county, California; bids March 22.

100 tons, postoffice, Union City, N. J.

Concrete Awards Compared

	Tons
Week ended March 11	5,250
Week ended March 4	4,475
Week ended Feb. 25	5,848
This week, 1932	2,250
Average weekly, 1932	3,920
Average weekly, 1933	3,755
Average weekly, Feb.	3,539
Total to date, 1932	57,321
Total to date, 1933	41,304

Wire Orders Light but Shipments Hold Well

Wire Prices, Page 41

Pittsburgh—Approximately 50,000 tons of cable have been bid for the east and westend superstructures for the San Francisco-Oakland bridge, and being included in the structural steel bid of the Columbia Steel Corp., a subsidiary of the United States Steel Corp., which bid was low on the total for cable and structural, it appears likely the American Steel & Wire Co. will furnish this large tonnage of cable. The merchant wire business has undergone restrictions in shipments the past week, according to experience of mills in this district. The wire price schedule is unchanged, calling for $1.85 a keg on carload lots of nails and 2.10c for plain wire for manufacturing purposes.

Worcester, Mass.—New wire business is light, but production shows little change, with mills taking care of their customers in the bank emergency. Prices are unchanged and will apply for second quarter, when they are expected to be subjected to more of a test.

New York—Wire shipments on contracts are going forward without interruption, although new business is light. Prices on products advanced recently are reaffirmed for second quarter.

Cleveland—Shipments have been retarded by bank restrictions, even where wiremakers have been willing to extend credit, manufacturers' requirements being slower. Prices are unchanged.

Chicago—Wire producers have opened second quarter books with prices unchanged from levels established a few weeks ago, standard wire nails $1.90, Chicago, in carloads, and plain wire 2.15c. Shipments tended downward during the latter part of last week after being well maintained by orders received Monday and Tuesday.

Boston chapter of the Institute of Scrap Iron and Steel Inc. has protested successfully against listing New England scrap dealers under the classification "junk dealers" in telephone directories.

Pipe

Cast Market Easier at New York—New Quantity Discounts on Mechanical Seamless Tubing

PIPE PRICES, PAGE 41

Cleveland—New quantity discounts have been been issued by leading producers of mechanical seamless steel tubing, representing reductions in prices applying to the larger quantities, and increases for the smaller. The adjustments conform with market conditions prevailing for the past several weeks. They follow:

Ft. (or) Lbs.		%	Ft. (or) Lbs.		%
15,000	22,500	70	750	1,125	55
5,000	7,500	68	500	750	50
2,000	3,000	65	250	375	45
1,000	1,500	60	100	150	40

Boston—For the third time Boston is asking bids on approximately 1400 tons of cast pipe, having rejected previous tenders, claiming prices too high. About 1000 tons are up for state work at Revere, Mass. Prices are fairly steady.

New York—New inquiry for cast pipe is light, with buying in small lots. Prices in some instances are $1 a ton lower at foundries. Two state jobs at Thiells and Orangeburg, N. Y., take close to 400 tons. Some substantial business may come out soon for Yonkers, N. Y.

Pittsburgh—Several recent 15, 20 and 25-mile line pipe inquiries may be closed as soon as the banking situation is clarified. Jobbers are expected to purchase more black and galvanized standard pipe this month. Demand for tubular products in the past week was lighter than in any of the preceding three or four weeks. A large tonnage of tubular products, including standard pipe, conduit and railings is included in the San Francisco bridge, bids last week.

Chicago—While some inquiries for cast iron pipe are looked for from communities for which federal loans recently have been approved for water system work, the market in the past week was quiet. Ft. Wayne, Ind., is to close shortly on 300 tons of fittings, while Springfield, Ill., is to take action on 150 tons of pipe.

Non-Skid Fire Escape Platform and Treads—

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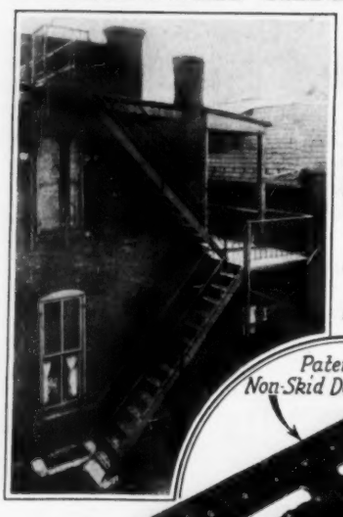

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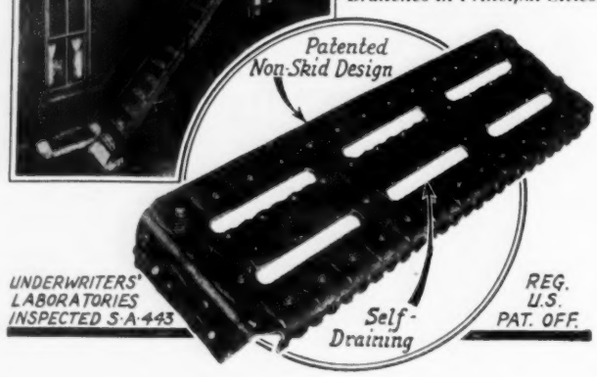


Cast Pipe Placed

525 tons, 12-inch, Chatham, Mass., to Warren Foundry & Pipe Co., Wharton, N. J.

325 tons, two to 12-inch, water mains, Fort Lewis, Wash., to Central Foundry Co., Holt, Ala.; West Coast Construction Co., Seattle, general contractor.

225 tons, 8, 10 and 20-inch, Gloucester, Mass., to Warren Foundry & Pipe Co., Wharton, N. J.

210 tons, 4 to 8-inch class 150, San Bruno, Calif., to Pacific States Cast Iron Pipe Co., Provo, Utah.

125 tons, approximate, 6 and 10-inch, Medford, Mass., to Warren Foundry & Pipe Co., Wharton, N. J.

Cast Pipe Pending

3000 tons, 4 to 16-inch, Cincinnati; United States Pipe & Foundry Co., Burlington, N. J., low.

1400 tons, 8, 12 and 16-inch, Boston; bids rejected for second time and readvertised.

1400 tons, 12 and 16-inch, San Francisco; American Cast Iron Pipe Co., Birmingham, Ala., low.

1000 tons, 20-inch and special castings, for Massachusetts for installation at Revere; bids March 16.

474 tons, 24-inch class C or 250, Glendale, Calif.; bids March 9.

300 tons, 14-inch, water line, Hobart, Okla.; bids March 20.

250 tons, 10 to 12-inch, New Rochelle, Westchester county, N. Y.; bids in.

200 tons, mainly 6 and 8-inch, state hospital, Orangeburg, N. Y.

177 tons, 2 to 20-inch, class C, plate sanitation and water lines, Letchworth village, Thiells, N. Y.; bids March 15.

136 tons, 8-inch class 150, Burbank, Calif.; bids March 14.

100 tons, 6-inch, Providence Gas Co., Providence, R. I.

Unstated tonnage, irrigation project, Fort Sumner, N. Mex.; R. F. C. authorizes loan of $135,000.

Unstated tonnage, 6 miles of various sizes, Bethel, O.; R. F. C. to purchase $35,000 worth of bonds. Project includes 100,000-gallon steel tank.

Iron Pipe Pending

Unstated tonnage, approximately 16,000 feet of small-size black and galvanized iron pipe, for United States engineer, Vicksburg, Miss.; Albert Pipe Supply Co. Inc., Brooklyn, N. Y., low.

Semifinished Prices Extended for Second Quarter

Semifinished Prices, Page 42

Without the formality of a definite announcement, prices of sheet bars, billets and slabs are being extended for the second quarter at $26, Pittsburgh, Youngstown, O., and Cleveland. There has been little buying to test this price. This implies reaffirmation of forging billets at $31, Pittsburgh. Books recently were opened for wire rods for second quarter at $35, Pittsburgh or Cleveland.

Pig Iron

Melters Alert To Buy Should Inflation Threaten

Pig Iron Prices, Page 42

Philadelphia—While some consumers have embargoed shipments temporarily, others apparently think this is a good time to consider buying ahead. Two responsible foundries have inquired for 3000 tons for shipment over the next six months. If the banking holiday is followed by inflation, as expected in many quarters, available pig iron would be absorbed speedily and the way paved for higher prices. Current sales involve a few carloads at $12.50, base eastern Pennsylvania furnace, for foundry, also a small lot of copper bearing low phos at $25, furnace. New sales from abroad are halted by a lack of knowledge of the exchange value of dollars.

Cleveland—Possibilities for inflation, with a consequent conversion of money into materials, has resulted in better inquiries for pig iron than in many months. Melters have been buying hand to mouth, but manifest an interest in future requirements. An Indiana consumer is obtaining prices on 2000 tons of pig iron for delivery over the remainder of the year; a Pennsylvania foundry is in the market for 2300 tons. Producers are reluctant to quote too far ahead. Sales, in small lots, also improved during the week, to approximately 3000 tons for furnace interests here.

Pittsburgh—The merchant iron trade here continued last week at the low ebb of the previous week. No merchant furnaces are blowing. No forward inquiring is noted with the exception of some radiator accounts which are indicating they may require pig iron to be shipped soon.

Boston—While pig iron sales continue light, largely limited to carloads and truck shipments, the banking situation appears without any direct effect. About 130 tons more of Dutch iron arrived recently. The local furnace holds to $17, furnace. Eastern Pennsylvania iron is available at $15.50, delivered at some points. Buffalo iron is $17.75 to $18, delivered. Some Indian iron has sold at $14.50 to $15, dock, while Dutch iron is $13 to $14, storage points.

Buffalo—The most optimistic feeling in several months is current locally, it being felt that prices are slated for a rise. From the standpoint of Buffalo furnaces, the foreign exchange situation indicates less severe competition in the East.

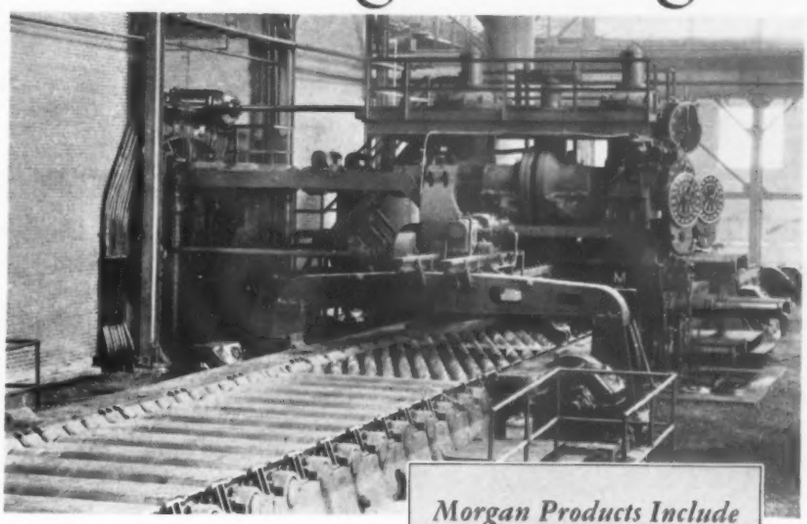
Cincinnati—Consumers showed little interest in pig iron the past week, with only small orders for imperative needs filtering into the market.

Chicago—Shipments of pig iron have declined, although sellers regard the situation as temporary. Some inquiries have been received, indicating that buyers are considering the possibilities of rising prices of commodities, although so far actual business has shown but little increase.

St. Louis—Improvement in the banking situation through action at Washington may revive interest in pig iron, which was interrupted by the banking holiday. Last year, consumers depleted inventories and in January and February came into the market for their requirements. With the closing of the banks this tendency was halted.

Toronto, Ont.—Merchant pig iron sales are tapering, chief demand originating from foundries on automotive work.

BUILT BY MORGAN *Engineering* » »



ADEQUATE experience accumulated over 63 years in serving many other well-known steel mills enabled Morgan engineers to design and build this 46" 2-High Universal Plate Mill used to roll wrought iron plate in the A. M. Byers Company plant at Ambridge, Pa. Morgan engineers have at their command a plant provided with the most modern equipment and a highly skilled shop organization, capable of executing successfully the most progressive ideas in the building of modern steel mill equipment. No project is too big for Morgan.

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Scrap

Steel Tonnage Bought by Large Pittsburgh User Causes Rise—Market Generally Damped

Pittsburgh—The leading interest here entered the market last week for 3000 to 4000 tons of No. 1 heavy melting steel at $8.75, 25 cents over its previous purchase. Opinion is mixed regarding the immediate outlook but a preponderance of sentiment favors a continued rise. Specialties and No. 1 heavy melting steel brought higher prices on the Pennsylvania railroad list of last week. About 2000 tons of this was moved to a down-river steel company at well over $9.25. A small sale of blast furnace scrap was made here recently at $5.50. No activity is reported recently in hydraulic compressed sheets or in machine shop turnings but some No. 2 steel was sold recently to a district mill at $7.15.

Boston—Trading in scrap is con-

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	6.00 to	6.50
Boston, dealers	3.00 to	3.25
Buffalo, No. 1	7.00 to	7.25
Buffalo, No. 2	6.00 to	6.25
Chicago	5.00 to	5.50
Cleve., No. 1	7.00 to	7.50
Cleve., No. 2	6.00 to	6.50
Det., No. 1 deal.	4.50 to	5.00
Det., No. 2 deal.	3.75 to	4.25
E. Pa. del. mill		6.50
E. Pa., No. 2 del.	5.00 to	5.50
Federal, Ill.	4.75 to	5.25
Granite City, Ill.	5.00 to	5.50
N. Y., deal. R. R.		5.00
N. Y. deal. No. 2		3.50
N. Y. deal. yd.	2.50 to	3.00
Pitts. No. 1	8.50 to	9.00
St. L. No. 1 sel.	5.50 to	6.00
Valleys, No. 1	8.50 to	9.00

COMPRESSED SHEETS

Buffalo, dealers	6.00 to	6.25
Chi. (Factory)	4.00 to	4.50
Cleveland	6.50 to	7.00
Detroit, dealers	4.00 to	4.50
E. Pa. new mat.	5.00 to	6.00
Pittsburgh	8.25 to	8.75
Valleys	8.00 to	8.50

BUNDLED SHEETS

Buffalo	4.00 to	4.50
Cincinnati, del.	4.00 to	4.50
Cleveland	4.50 to	5.00
Eastern, Pa.		5.00
Pittsburgh	7.25 to	7.75
St. Louis	1.50 to	2.00

SHEET CLIPPINGS LOOSE

Chicago	2.00 to	2.50
Cincinnati	1.50 to	2.00
Detroit, dealers	1.25 to	1.75
St. Louis	1.50 to	2.00

STEEL RAILS SHORT

Birmingham	6.50 to	7.50
Boston, dealers	3.00 to	3.25
Buffalo	9.50 to	10.00
Chicago (3 ft.)	7.50 to	8.00
Chicago (2 ft.)	8.00 to	8.50
Cincinnati, del.	8.50 to	9.00
Detroit, deal.	8.00 to	8.50
Pitts. (open-hearth, 3 ft. and less)	10.00 to	10.50
St. Louis	7.00 to	7.50

STOVE PLATE

Birmingham	5.00 to	5.50
Boston, dealers	2.00 to	2.50
Buffalo	7.00 to	7.35
Chicago, net	4.50 to	5.00
Cinci., deal. net	3.50 to	4.00
Det., net deal.	2.50 to	3.00
Eastern Pa.	5.50 to	6.00
N. Y., deal. mill	2.50 to	3.00
St. Louis	5.50 to	6.00

COUPLERS, SPRINGS

Buffalo	8.50 to	9.00
Chicago	6.50 to	7.00
Eastern Pa.	8.00 to	8.50
Pittsburgh	9.75 to	10.25
St. Louis	5.25 to	6.25

ANGLE BARS—STEEL

Chicago	7.00 to	7.50
St. Louis	5.75 to	6.25

LOW PHOSPHORUS

Buffalo, billets and bloom crops	8.50 to	9.00
Cleveland bil. and bloom crops	10.00 to	11.00
Eastern Pa.		10.00
Pittsburgh billet bloom crops	10.75 to	11.25
Pitts., sheet bar crops	10.75 to	11.25

FROGS, SWITCHES

Chicago	5.00 to	5.50
St. Louis	5.00 to	5.50

SHOVELING STEEL

Chicago	5.00 to	5.50
Cleveland	5.75 to	6.00
St. Louis	4.75 to	5.25

RAILROAD WROUGHT

Birmingham	6.00 to	6.50
Boston, dealers	1.00 to	1.50
Buffalo, No. 1	4.25 to	4.75
Buffalo, No. 2	7.00 to	7.25
Chi., No. 1, net	4.50 to	5.00
Chicago, No. 2	5.00 to	5.50
Cinci., No. 2	5.00 to	5.50
Eastern Pa.		6.50
N. Y., No. 1, deal.	2.50 to	3.00
Pitts., No. 1	8.50 to	9.00
St. Louis, No. 1	8.50 to	4.00
St. Louis, No. 2	5.00 to	5.50

SPECIFICATION PIPE

Boston	3.00 to	4.00
Eastern Pa.	6.00 to	7.00
N. Y., deal	2.00 to	2.25
St. Louis	4.75 to	5.25

BUSHELING

Buffalo, No. 1	6.00 to	6.25
Chicago, No. 1	3.50 to	4.00
Cinci., No. 1 deal.	4.00 to	4.50
Cinci., No. 2	2.50 to	3.00
Cleve., No. 2	4.00 to	4.50
Det., No. 1 new deal.	3.50 to	4.00
St. L., No. 1	3.00 to	3.50
Val. new No. 1	8.50 to	8.75

MACHINE TURNINGS

Birmingham	2.50 to	3.00
Boston, dealers	0.75 to	1.00
Buffalo	3.75 to	4.25
Chicago	3.25 to	3.75
Cinci., deal	3.00 to	3.50
Cleveland	4.00 to	4.25
Detroit	2.25 to	2.75
Eastern Pa.	3.00 to	3.50
N. Y., deal.	1.35 to	1.50
Pittsburgh	6.25 to	6.75
St. Louis	1.50 to	2.00
Valleys	6.25 to	6.75

BORINGS AND TURNINGS

For Blast Furnace Use

Boston, dealers	0.75 to	0.90
Buffalo	3.00 to	3.50
Cinci., deal	3.00 to	3.50
Cleveland	4.50 to	5.00
Detroit, deal.	2.75 to	3.25
Eastern Pa.	3.50 to	3.75
N. Y., deal.	1.35 to	1.50
Pittsburgh	5.50 to	6.00

CAST IRON BORINGS

Birming., chem.	8.50 to	9.50
Birming., plain	2.50 to	3.00
Boston, chem.	5.50 to	6.00
Boston, dealers	1.00 to	1.25
Buffalo	3.50 to	4.00
Chicago	3.25 to	3.75
Cinci., deal.	3.00 to	3.50
Cleveland	4.50 to	5.00
Detroit, deal.	2.75 to	3.25
Eastern Pa.	3.50 to	3.75
E. Pa., chem.	8.00 to	10.00
N. Y., deal.	1.00 to	1.50
Pittsburgh	5.50 to	6.00
St. Louis	2.00 to	2.50

PIPE AND FLUES

Cinci., deal.	3.25 to	3.50

RAILROAD GRATE BARS

Buffalo	4.00 to	4.50
Chicago, net	5.00 to	5.50
Cincinnati	4.00 to	4.50
Eastern Pa.	5.50 to	6.00
N. Y., deal.	3.50 to	4.00
St. Louis	4.50 to	5.00

FORGE FLASHINGS

Boston, dealers	2.00 to	2.50
Buffalo	5.50 to	6.00
Cleve. ov. 10 in.	6.00 to	6.50
Detroit	2.75 to	3.25

FORGE SCRAP

Boston, dealers	1.75 to	2.00
Chicago	6.50 to	7.00
Eastern Pa., del.	5.00 to	5.50

ARCH BARS, TRANSOMS

Chicago, net	5.00 to	5.50
St. Louis	3.50 to	4.00

AXLE TURNINGS

Boston, deal.	2.50 to	3.00
Buffalo	6.00 to	6.25
Chi., elec. fce.	4.50 to	5.00
Cleveland	5.50 to	6.00
Eastern Pa., del.	6.00 to	7.00
Pittsburgh, O. H.	7.00 to	7.50
St. Louis	3.00 to	3.50

STEEL CAR AXLES

Birmingham	8.00 to	8.50
Boston, ship. pt.	5.50 to	6.50
Buffalo	10.00 to	10.50
Chicago, net	8.50 to	9.00
Eastern Pa.		14.50
St. Louis	8.75 to	9.25

SHAFTING

Boston, ship pt.	6.50 to	7.00
Eastern Pa.	11.00 to	12.00
N. Y., deal.	5.50 to	6.00
St. Louis	7.50 to	8.00

CAR WHEELS

Birming., iron	6.50 to	7.00
Boston, iron deal.	3.00 to	3.25
Buffalo, iron	7.00 to	8.00
Buffalo, steel	8.50 to	9.00
Chicago, iron	8.00 to	8.50
Chi., rolled steel	7.00 to	7.50
Cincinnati iron	6.25 to	6.75
E. Pa. iron		8.50
E. Pa. steel	8.00 to	8.50
Pitts., iron	7.75 to	8.25
Pitts., steel	9.25 to	9.75
St. Louis, iron	4.75 to	5.25
St. Louis, steel	6.00 to	6.50

NO. 1 CAST SCRAP

Birmingham	6.00 to	7.00
Boston, textile	6.50 to	6.75
Boston, No. 2	2.00 to	2.25
Buffalo (Mach.)	9.50 to	10.00
Buffalo, cupola	9.00 to	9.25
Chi., mach. net	5.75 to	6.25
Chi., railroad net	5.50 to	6.00
Chicago, agri., net	5.00 to	5.50
Cinci., mach. cup	6.50 to	7.00
Cleve. cupola	7.00 to	8.00
Det., net deal.	6.50 to	7.00
E. Pa. cupola	9.00 to	9.50
N. Y., cup. deal.	4.50 to	5.00
N. Y., del. local foundries	7.00 to	7.50
Pitts., cupola	9.00 to	9.50
San Fran., del.	13.50 to	14.00
Seattle	4.50 to	6.50
St. L. No. 1 mach.	6.00 to	6.50
St. L. No. 1	5.50 to	6.00

HEAVY CAST

Boston, del.	3.25 to	3.50
Bost., mach. cast	7.00 to	7.50
Buffalo, break	6.50 to	7.00
Cleve., break	5.50 to	6.00
Detroit, auto net deal.	7.00 to	7.50
Det. break., deal.	4.00 to	4.50
Eastern Pa.	8.00 to	8.50
N. Y. No. 1, deal.	4.50 to	5.00
N. Y. break, deal.	4.00 to	4.50
Pittsburgh	8.00 to	8.50

MALLEABLE

Boston, consum.	6.75 to	7.25
Buffalo	8.00 to	8.50
Chicago, agri.	5.00 to	5.50
Chicago, R. R.	5.50 to	6.00
Cinci., agri. del.	6.00 to	6.50
Cinci., R. R., del.	6.50 to	7.00
Cleveland, rail	7.50 to	8.00
Det. auto deal.	5.00 to	5.50
St. Louis	7.00 to	7.50

RAILS FOR ROLLING

5 feet and over

Birmingham	3.00 to	3.50
Boston, deal.	5.00 to	5.50
Buffalo	7.00 to	7.50
Chicago	7.50 to	8.00
Eastern Pa.		9.50
New York dealer	3.75 to	4.25
St. Louis	7.00 to	7.50

LOCOMOTIVE TIRES

Chicago, cut	7.00 to	7.50
St. L., No. 1	5.00 to	5.50

LOW PHOS. PUNCHINGS

Buffalo	9.00 to	9.50
Chicago	7.00 to	7.50
Eastern Pa.	8.00 to	8.50
Pittsburgh	10.00 to	10.50

fined to exports of No. 1 and No. 2, dealers having sold close to 7000 tons for Japan and several thousand tons for Danzig. Domestic consumption of all grades is light, New England melters taking little while outside rail shipments are at a standstill. Worcester, Mass., is taking a few scattered lots of No. 1 and No. 2 at unchanged prices. No. 1 for export brings $5 minimum barge.

New York—Dealers with foreign contracts are facing a tightening market for No. 1 and 2 steel in this territory, with some short and seeking to cover at present prices. No new business is being taken and a considerable tonnage remains to be accumulated against contracts.

Philadelphia—Banking complications are interfering with the scrap market. Some collectors will not make shipments except for cash, impossible to obtain. Some consumers have asked that shipments be stopped temporarily.

Buffalo—Dealers are revising nominal quotations upward, although there are no sales on which to base prices. Largest handlers of scrap insist a tonnage of No. 1 heavy melting steel would command about $8 if purchased today. They also are asking 25 to 50 cents a ton more for several grades than was obtained on previous contracts.

Cleveland—Dealers in this section have been laying down scrap at prevailing low prices and are awaiting an expected break from present small buying, as consumer stocks are unusually light. Some shipments on orders are being made but sales in open-hearth grades are slow. Borings and turnings are scarce and a buying movement in these grades is expected.

Detroit—Blast furnace scrap has advanced another 25 cents a ton, due more to curtailed offerings than to increased demand. Some strength, however, has accrued to these grades from covering on short orders for the local blast furnace. The market generally is firm.

Cincinnati—Prices of iron and steel scrap are firmer with evidence that tonnage purchases would push up quotations, as scrap is scarce. Temporary restrictions by some mills brought shipments low.

Chicago—Activity in the scrap market came to almost a complete halt the past week. Mill shipments have been curtailed or suspended while new buying is absent. Prices are nominally unchanged and the outlook for a higher market in keeping with the stronger trend in other commodities is regarded as dependent largely upon improvement in demand. Supplies of some grades continue scarce and any material increase in requirements, it is thought, would bring about higher prices.

St. Louis—Due to the bank holiday, the market for iron and steel scrap is practically at a standstill. A few small tonnages are moving to mills, and some material is being taken in by foundries.

Birmingham, Ala.—Purchasing is at a standstill and prices weak.

Toronto, Ont.—Owing to restricted resale demand for iron and steel scrap dealers are out of the market for most lines and have made no revision in prices for several months. Steel grades are stagnant, while a few lines of iron scrap are moving irregularly.

Equipment

Bar Mill Drives Ordered; Market Generally Dull

Pittsburgh—American Steel & Wire Co. awarded an order last week for several bar mill drives to a leading equipment maker in this district. Another builder here is supplying a considerable part of the new equipment needed in the Naugle & Townsend project to cast steel centrifugal (see p. 11).

Chicago—Equipment markets were at a standstill during the past week, particularly as regards purchases by smaller users. Most buyers preferred to await the outcome of the banking situation even though interest in purchase of equipment not urgently needed previously had been light. Some orders are appearing from larger interests although the general tendency is to postpone any extensive commitments for the present.

Worcester, Mass.—Until the recent bank crisis, there had been signs of some spotty improvement in machine building operation, notably in the western section of Massachusetts. Some sections in New England as a rule take a fair volume of Ford part business which to date has been about 25 per cent of normal. A seasonal pick-up is in sight, however, and is expected to develop shortly.

New York—Most activity in machinery and equipment is with navy yards. Private industrial buying and inquiry are dormant.

PHOENIX ROLLS

For more than sixty years PHOENIX ROLLS have been the standard of comparison and service throughout the steel mills of the world, rolling millions of tons of steel annually.

PHOENIX SERVICE: has come to mean a continuing interest in every roll we sell until its full life has been obtained.

Recently modernized Open Hearths, Air Furnaces, Grinding and Finishing equipment enable us to lead the present day trend toward more durable rolls which will give better finish and reduced rolling mill costs.

Our latest development, PHOENIXLOY, a uniformly hard roll, is giving service today in many flat rolling mills which only two years ago was thought impossible.

Phoenix Metal Rolls
Phoenix "A" Rolls
Phoenix "K" Rolls
Phoenix Tube Mill Rolls
Phoenix Chill Rolls
Phoenix Nickel Chill Rolls
Phoenix Steel Rolls
Phoenix Sand Rolls

PHOENIXLOY
(Uniformly Hard)

PITTSBURGH ROLLS CORPORATION
PITTSBURGH, PA.

Warehouse

Warehouse Buying Fades as Credit Tightens

Warehouse Prices, Page 52

New York—Immediate result of banking interruption with steel warehouses was a drop in small orders and inquiry. In some instances shading is less pronounced.

Boston—Reduction to 5.90c from 6.40c has been made by Boston jobbers on No. 24 gage galvannealed sheets instead of No. 24 galvanized sheets as announced last week. Volume is light with prices unchanged.

Pittsburgh—Bars and small shapes remain 2.60c out of stock although shaded on some business. Warehouse sales in the Pittsburgh district last week were small.

Cincinnati—Warehouses report banking restrictions have cut into their demand sharply.

Cleveland—Warehouse business was nearly at a standstill during the week. There is a feeling that business will accelerate quickly with improvement in the banking and currency situation.

Detroit—Warehouse business in iron and steel is increasingly quiet and probably will remain so until business generally recovers sufficiently to stimulate demand for new automobiles. Prices are unchanged.

Chicago—Sales have declined sharply, largely as a result of the banking situation and activity is near the lowest level of recent years.

St. Louis—Except for emergency material, purchases from warehouse during the past several days amounted to almost nothing.

Alloy Bars Reaffirmed

Alloy Prices, Page 41

Makers of alloy steel bars are reaffirming current prices for second quarter contracts. Shipments to the automotive industry have been suspended in many instances, but few cancellations have been reported.

Coke

Cokemakers Ship Regardless of Bank Situation

Coke Prices, Page 42

Coke producers generally are filling consumers' requirements regardless of restrictions on means of payment. Demand generally is lower, in keeping with curtailed activity, and domestic requirements show a seasonal decline.

The railroads have contributed to situation by eliminating demurrage and postponing payment of freight charges.

Prices are steady and no indications of inflationary buying have appeared. Next month, prices on domestic grades will be reduced at Chicago. The market on premium foundry, Connellsville basis, is now $4.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

	□
Baltimore*	2.35c
Boston††	2.90c
Buffalo	2.95c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	2.40c
Los Ang.	3.30c
New Orleans	2.50c
New York‡(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.60c
Portland	3.35c
San Fran.	3.15c
Seattle	3.00c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS □

Baltimore	2.35c
Boston††	3.10c
Buffalo	3.15c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia	2.45c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS □

Baltimore	2.35c-3.00c
Boston	3.10c-3.25c
Buffalo	2.95c
Chattanooga	3.00c
Cincinnati	3.00c
Cleveland	2.10c-2.25c
Detroit	2.85c
Houston	3.00c
Los Ang. cl.	2.10c
New Orleans	2.75c
Los Ang., lcl	2.40c
New York	2.65c-3.10c
Phila.	2.62½c
Pittsburgh	2.30c
San Fran. cl.	2.40c
San Fran. lcl	2.80c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES □

Baltimore*	2.55c
Boston††	3.00c
Buffalo	3.20c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	2.65c
Los Ang.	3.30c
New Orleans	3.50c
New York(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.85c
Portland	3.35c
San Fran.	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

PLATES □

Baltimore*	2.35c
Boston††	3.00c
Buffalo	3.20c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Cleve., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.30c
New Orleans	3.50c
New York(d)	3.30c
Philadelphia	2.45c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	3.35c
San Fran.	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

NO. 10 BLUE □

Baltimore*	2.80c
Boston††	2.90c-3.00c
Buffalo	3.10c-3.25c
Chattanooga	3.50c
Chicago	2.75c-2.90c
Cincinnati	3.05c
Cleveland	3.00c
Detroit	2.90c-3.05c
Houston	3.35c
Los Ang.	3.60c
New Orleans	3.25c
New York	3.00c
Portland	4.00c
Phila.*† (e)	2.70c
Pitts.**	2.65-2.90c
San Fran.	3.50c
Seattle	3.50c
St. Louis	3.00c-3.15c
St. Paul	3.45c
Tulsa	3.70c

NO. 24 BLACK □

Balt.*†	3.50c
Boston††	3.85c
Buffalo	3.70c
Chattanooga	3.65c
Chicago	3.20c
Cincinnati	3.50c
Cleveland	3.25c
Detroit	3.50c
Los Ang.	4.20c
New York	3.25c
Phila.*†(e)	3.15c
Pitts.**	3.35c
Portland	4.50c
San Fran.	3.90c
Seattle	4.25c
St. Louis	3.70c
St. Paul	3.695c
Tulsa	4.75c

NO. 24 GAL. SHEETS □

Balt.*†	4.00c
Buffalo	4.00c
Boston††	4.05c
Chattanooga	3.95c
Chicago	3.25c-3.50c

††Base 15,000 lbs., extras on less.

Cincinnati	3.55c
Cleveland	3.50c
Detroit	3.75c
Houston	3.57c
Los Ang.	4.50c
New Orleans	3.95c
New York	3.75c
Phila.*† (e)	3.50c
Pitts.**	3.85c
Portland	5.00c
San Fran.	4.55c
Seattle	4.75c
St. Louis	4.00c
St. Paul	4.19c
Tulsa	5.10c

†BANDS □

Baltimore	2.65c
Boston††	3.40c
Buffalo	3.30c
Chattanooga	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	2.85c
Los Ang.	3.80c
New Orleans	2.75c
New York(d)	3.30c
Philadelphia	2.75c
Pittsburgh	2.95c
Portland	3.85c
San Fran.	3.15c
Seattle	3.50c
St. Paul	3.20c
Tulsa	3.45c

†HOOPS □

Baltimore	2.65c
Boston	4.90c
Buffalo	3.95c
Chicago	3.50c
Cincinnati	3.75c
Det. No. 14 & lighter	3.30c
New York	3.30c
Philadelphia	3.00c
Pittsburgh	3.60c
Seattle	5.00c
St. Paul	3.75c

†New extras apply.

COLD FIN. STEEL □

Rounds and Hexagons

Baltimore (c)*	3.48c
Boston	3.60c
Buffalo	3.00c
Chattanooga*	3.65c
Chicago	3.00c
Cincinnati	3.32c
Cleveland	2.95c
Detroit	3.15c
Los Ang. (a)	4.25c
New York(g)	3.54c
Pittsburgh	2.95c
Portland (a)	4.50c
San Fran(d)(f)	5.55c
Seattle (a)	4.50c
St. Paul (a)	3.20c
St. Louis	3.36c
Tulsa	4.65c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted.
Phila. bar base 3.35c

COLD ROLL. STRIP □

Boston 0.100 in., 500 lb. lots	5.20c
Buffalo	5.25c
Chicago (b)	5.65c
Cincinnati	5.80c
Cleve. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(a) Rounds, hex. only.
(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
(e) New mill classif.
(f) Rounds only.
(g) Bessemer analysis extras included.
‡Domestic bars.
*Plus quan. extras.
**Under 25 bundles.
*†50 or more bundles.

Pacific Coast

Bids Opened on Many Projects But Lettings Are Few—Bank Holiday Defers Some Work—Fear Reduction in Highway Work May Limit Steel Needs—Pipe Buying Holds Well

San Francisco—(*By Air Mail*)—Although bids were opened on a number of projects during the past week, including the first unit of the San Francisco-Oakland bridge, involving 1900 tons of reinforcing bars, 150 tons of shapes and 225 tons of timber fastenings, only two awards were reported placed. Due to the bank holiday, the opening of bids on two other units of the San Francisco-Oakland bridge, calling for 1040 tons of reinforcing bars and 248 tons of shapes, have been delayed.

The only reinforcing bar award of size involved 570 tons for a state bridge over the San Gabriel river in Los Angeles county, California, booked by an unnamed interest. Bids have been opened on 700 tons for the federal building, San Francisco, and on 115 tons of shapes and 492 tons of reinforcing bars for a bridge in San Diego county, California. The date for the opening of bids on 200 tons of shapes and 735 tons of reinforcing bars for award for the General hospital, San Francisco, has again been advanced from March 8 to April 5. Bids open March 22 for 269 tons for state highway work in San Francisco county.

Plate fabricators were disappointed when the Irvington tunnel of the Hetch Hetchy project, San Francisco, calling for 850 tons of 60-inch welded pipe, went reinforced concrete. Quotations are general at 1.85c, c.i.f.

Bids have been opened on the largest structural project so far this year, involving 4800 tons for the federal building, San Francisco. N. P. Severin Co., Chicago, was low on the general contract. Bids have been opened on 250 tons for a balloon hangar at Sunnyvale, Calif. Transbay Bridge Construction Co., San Francisco, was low bidder on contract No. 2, San Francisco-Oakland bridge, the West Bay substructure, at $6,957,100. Bids will be opened March 29 for 1500 tons for a county jail, San Francisco. Wide flange material is firm at 2.20c, c.i.f., while standard shapes hold at 2.10c.

Pacific States Cast Iron Pipe Co. took 210 tons of 4 to 8-inch pipe for San Bruno, Calif. American Cast Iron Pipe Co. was low on 1400 tons of 12 and 16-inch pipe for San Francisco. Bids opened March 9 for 474 tons of 24-inch pipe for Glendale, Calif., March 14 for 136 tons for Burbank, Calif., and March 10 for 100 tons for Santa Monica, Calif.

Pipe Is Most Active

Seattle—Iron and steel interests are closely watching closing sessions of the Washington and Oregon legislatures where the highway program for two years will be established.

United States Engineer, Portland, Oreg., will open bids March 31 for jetty repairs at the mouth of the Columbia river involving two lines of standard gage tramway 9500 feet long.

About 165 tons of cast iron pipe were awarded in three contracts in the past week. Universal Pipe Co., Birmingham, Ala., through Walsh & Co., Seattle, booked 65 tons of 6-inch pipe for Auburn, Wash. Pacific States Pipe Co., Provo, Utah, took about 50 tons for Ashland, Oreg., and was low with Crane Co. for a similar tonnage for The Dalles, Oreg. The largest tonnage immediately pending is for Bellingham, Wash., 450 tons, bids March 9, alternate tenders for wood stave. Linden, Wash., opened bids March 6 for approximately 100 tons of 6-inch and accessories.

Steel in Europe

Improvement Slow in Britain —Continental Prices Weak

London—(*By Cable*)—Middlesbrough trade is quietly expanding and inquiries for export are increasing. South African interests have placed 8000 tons of rails and fastenings. Trade in the Birmingham and Scottish districts has improved only slightly. Canada has placed some tonnages of steel plates. Tin plate demand is quiet.

From the Continent the report is that international complications are checking business and prices are weakening. Japan is placing some plate business.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, March 2. (New basis lacking through suspension of banking)

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports	£ s d	Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	£ s d	£ s d
PIG IRON					
Foundry, 2.50-3.00 Silicon	$10.12	2 18 6	$8.27		1 14 0
Basic bessemer	9.34	2 14 0*	6.57		1 7 0
Hematite, Phos. .03-.05	10.21	2 19 0	.....		.....
SEMIFINISHED STEEL					
Billets	$17.30	5 0 0	$10.22		2 2 0
Wire rods, No. 5 gage	25.95	7 10 0	21.90		4 10 0
FINISHED STEEL					
Standard rails	$26.82	7 15 0	$26.77		5 10 0
Merchant bars	1.00c	6 10 0	.53c		2 8 0
Structural shapes	1.14c	7 7 6	.48c		2 4 0
Plates, †¼ in. or 5 mm	1.31c	8 10 0	.72c		3 5 0
Sheets, black, 24 gage or 0.5 mm.	1.31c	8 10 0	1.24c		5 12 6
Sheets, gal., 24 gage, corr.	1.62c	10 10 0	1.46c		6 12 6
Bands and strips	1.19c	7 15 0	.80c to .83c		3 12 6 to 3 15 0
Plain wire, base	1.35c	8 15 0	1.18c		5 7 6
Galvanized wire, base	1.62c	10 10 0	1.38c to 1.40c		6 5 6 to 6 7 6
Wire nails, base	1.85c	12 0 0	1.27c		5 15 0
Tin plate, box 108 lbs.	$ 2.77	0 16 0	.....		.....

British ferromanganese $68 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs		Belgian Francs		Reich Marks	
Fdy. pig iron, Si. 2.5	$10.81	3 2 6(a)	$ 8.10	205	$ 8.46	300	$16.47	69
Basic bessemer pig iron	10.21	2 19 0*(a)	6.32	160	7.90	280	18.02	75.50
Furnace coke	2.34	0 13 6	4.75	120	3.10	110	4.59	19.25
Billets	17.30	5 0 0	14.62	370	10.29	365	23.03	96.50
Standard rails	1.27c	8 5 0	1.25c	697	1.50c	1,150	1.43c	132
Merchant bars	1.04c	6 15 0	.95c	530	.60c	465	1.19c	110
Structural shapes	1.35c	8 15 0	.99c	550	.60c	465	1.16c	107.50
Plates, †¼-in. or 5 mm	1.35c	8 15 0	1.17c	650	.74c	570	1.37c	127
Sheets, black	1.46c	9 10 0§	1.44c	800‡	.91c	700‡	1.56c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm	1.81c	11 15 0	2.39c	1,325	1.87c	1,440	4.00c	370
Plain wire	1.42c	9 5 0	2.03c	1,130	1.69c	1,300	1.91c	177
Bands and strips	1.46c	9 10 0	.90c	500	.81c	625	1.37c	127

*Basic. †British ship-plates, Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price.
British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel.
(a) Delivered.

Nonferrous Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 5.50c, Conn., for copper

SHEETS	
Yellow brass (high)	11.00
Copper, hot rolled	13.62½
Lead sheets, cut, to jobbers	7.25
Zinc sheets (100-lb. base)	9.00
TUBES AND PIPES	
Seamless yellow brass (high)	13.25
Seamless copper	12.37½
RODS	
Yellow brass (high, full turning)	8.50
Naval brass	9.62½
ANODES	
Copper, untrimmed	10.50
WIRE	
Yellow brass (high)	11.00

Old Metals

Dealers' buying prices, cents lb.

NO. 1 COMPOSITION RED BRASS	
New York	2.50 to 2.75
Chicago	2.00 to 2.12½
Cleveland	2.50 to 2.75
St. Louis	2.25
HEAVY YELLOW BRASS	
New York	1.75 to 2.00
HEAVY COPPER AND WIRE	
New York	3.87½ to 4.00
Chicago, No. 1	2.87½ to 3.00
Cleveland	3.00 to 3.25
St. Louis	2.50
COMPOSITION BRASS BORINGS	
New York	2.25 to 2.50
YELLOW BRASS TUBING	
Cleveland	1.75 to 2.00
LIGHT COPPER	
New York	2.75 to 3.00
Chicago	2.00 to 2.12½
Cleveland	2.50 to 2.75
St. Louis	2.25
LIGHT BRASS	
Chicago	0.87½ to 1.00
Cleveland	1.50 to 1.75
St. Louis	1.25
LEAD	
New York	2.12½ to 2.37½
Cleveland	1.75 to 2.25
Chicago	1.75 to 2.00
St. Louis	2.00
ZINC	
New York	1.25 to 1.37½
Cleveland	1.12½ to 1.25
Chicago	0.87½ to 1.00
St. Louis	1.25
ALUMINUM	
Clippings, new, soft, Cleve.	9.50 to 11.00
Clippings, hard, Cleveland	6.00 to 6.50
Borings, Cleveland	2.50 to 3.50
Mixed cast, Cleveland	4.00 to 4.50
Mixed cast, St. Louis	4.00 to 4.25

Secondary Metals

Brass ingot, 85-5-5-5	5.75
Remelt aluminum No. 12	8.00 to 9.00

Metals

Prices Push Upward Rapidly as Prospects for Inflation Become More Certain

New York—Metal prices jumped sharply during the past week as prospects for at least mild inflation became more certain as an outcome of the banking situation. Speculative interest developed in the market but sales were not in large volume except in the case of lead.

Copper—Domestic sellers of copper were reluctant to quote until the outcome of the banking situation becomes more clarified. Metal was available in a limited way from custom smelters early in the week at 5.00c, Connecticut, but on Thursday business was done at 5.50c, a ½-cent advance. Mine producers held out of the market at the nominal quotation of 6.25c. The advance in copper was accompanied by a ½-cent rise in copper and brass products, offsetting the cut announced March 1. Brass ingot was pushed up a similar amount. Scrap metals also were quoted higher.

Lead—Increased demand developed Monday which continued during the week. Total sales volume for the week was estimated to have topped that for the entire month of February. Sellers advanced their quotations 25 points Wednesday and 10 points further Friday to the bases of 3.35c, New York, and 3.22½c, East St. Louis, but this proved to have no dampening effect on the heavy buying.

Zinc—Most sellers were cautious as to quoting prices. A fair buying interest developed as the week progressed, accompanied by higher prices. Sellers generally restricted business to regular customers and those with proper credit rating. Most of the sales were for March and April positions with prices on futures difficult to determine.

Tin—Trading in Straits tin was at an almost complete standstill due to the absence of an official rate on sterling exchange with which quotations on the metal are closely linked. Quotations in the domestic market, therefore were entirely nominal although small lots were reported to have changed hands at around 24.50c to 25.00c, against the last market quotation of 23.75c.

Antimony—The market continued quiet but quotations moved upward in line with the strength in other metals.

Benzol Prices Advanced

New York—Benzol is up 2 cents to 22 cents a gallon, tank cars, the first advance in distillates in many months. Other distillates are firm.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.22
90 per cent benzol	0.22
Toluol	0.30
Solvent naphtha	0.36
Comercial xylol	0.26

Per Pound at Producers' Plants in 250-Pounds Drums

Phenol	0.153 to 0.173

Per Pound at Producers' Plants

Naphthalene flakes	4.75 to 5.75
Naphthalene balls	4.75 to 5.75

Per 100 Pounds Atlantic Seaboard

Sulphate of ammonia	$1.10

Buying is slower, but distributors are shipping steadily. Business in phenol and naphthalene shows little change in volume. Sulphate of ammonia is fairly active.

Quicksilver Steady

New York—Good demand is reported for quicksilver, with prices firmer at $53, a virgin flask of 76 pounds in round lots, and $54 for small lots. Platinum prices have been advanced to $30 a refined ounce, and iridium to $50 an ounce. Palladium is quotably unchanged at $15 to $17 an ounce.

Nonferrous Metal Prices of the Week, Cents a Pound

Spot unless otherwise specified

	Copper			Straits Tin, New York		Lead	Lead	Zinc	Aluminum	Antimony	Ingot
	Electro., del. Conn.	Lake, del. Midwest	Casting, refinery	Spot	Futures	N. Y.	East St. L.	St. L.	98-99%	Spot, N. Y.	Nickel
March 4	5.00	5.12½	4.75	*	*	3.00	2.87½	2.70	22.90	5.62½	35.00
March 6	5.00	5.12½	4.75	*	*	3.00	2.87½	2.70	22.90	5.62½	35.00
March 7	5.00	5.12½	4.75	*	*	3.00	2.87½	2.75	22.90	5.75	35.00
March 8	5.25	5.12½	5.00	*	*	3.25	3.12½	2.80	22.90	5.75	35.00
March 9	5.50	5.62½	5.25	*	*	3.25	3.12½	3.00	22.90	6.00	35.00
March 10	5.50	5.62½	5.25	*	*	3.35	3.22½	3.05	22.90	6.25	35.00

*Bank holiday. Sterling exchange trading suspended.

Construction and Enterprise

New England

LYNN, MASS.—North Products Co. has started manufacturing operations at 130 Essex street, Lynn, producing a line of wire shoe forms and wire hangers for home and store use. John R. North Jr. is owner.

Pennsylvania

PITTSBURGH—Federal engineers in the Pittsburgh district have asked $1,825,000 allotment from the division engineer at St. Louis, to be used to complete twin locks in the Ohio river at Montgomery island and start construction of roller top dam there. Bids probably late this year.

UNIONTOWN, PA. — Laboratory building of the W. J. Rainey Coal Co. was destroyed by fire Feb. 28.

Ohio

CINCINNATI—Cincinnati Steel Products Co., Carrel street and the Pennsylvania tracks, has incorporated its previous individual partnership, with 250 shares no par value. John W. Herr, Stella B. Harden and Truman A. Herron are the incorporators.

TOLEDO—Baker Furnace & Cleaner Mfg. Co. has been incorporated with 250 shares no par value, by Boggs & Chase, Nicholas building, Toledo, O.

Michigan

BELLEVUE, MICH.—Village council is considering the possibility of erecting and operating a municipal electric light and power plant.

COLDWATER, MICH. — Coldwater Brass Co. has been incorporated with $10,000 capital to manufacture brass goods for plumbers, by Alfred G. Morency, Coldwater, Mich.

DETROIT—Great Lakes Engineering Works, River Rouge, Mich., is low bidder for a lighthouse tender, at $66,566. The tender will be 81 feet long, diesel powered, to replace an outmoded vessel.

MANISTEE, MICH.—City commission has approved opening and consideration of bids for a municipal power plant cost survey.

MARINE CITY, MICH.—Plans are being made for a new industry to take over the plant of the former Independent Sugar Co., involving complete remodeling of the plant.

Indiana

GARY, IND.—Wheel Engine Power Co. Inc. has been incorporated with $10,000 capital to manufacture steam and air engines and accessories, by Edgar D. Crumpacker, Thomas Colosimo and Martha F. Walton.

Illinois

CHICAGO—Chrome Plate Process Co., 160 North LaSalle street, has been incorporated with 1000 shares no par value to do chrome plating, by Stuart B. Bradley, 160 North LaSalle street.

CHICAGO—Newitt-Metzger Co. Inc., 160 North Michigan avenue, has been incorporated with $10,000 capital to manufacture machinery, by Hummer & Hummer, 69 West Washington street.

CHICAGO—Century Razor Blade Co., 154 East Erie street, has been incorporated with $2000 capital to manufacture barber supplies, by Edwin F. Conley and associates.

CHICAGO—Thermo Motor & Ventilating Co. Inc., 224 North Sheldon street, has been incorporated with $85,500 capital, by Abram A. Schwarzbach, 105 West Adams street, Chicago.

CHICAGO—Sunbeam Heating & Air Conditioning Co., 1627 West Pershing road, has been incorporated with 1000 shares no par value to conduct a general heating and ventilating business.

CHICAGO — Paramount Gas Utilities Co., 11 South LaSalle street, room 1809, has been incorporated with 35,000 shares no par value, to manufacture heating devices, by Rieger & Rieger, 11 South LaSalle street.

Southern States

WASHINGTON—Bureau of supplies and accounts, navy department, will open bids as follows: March 21, schedule 9728, one vertical, motor-driven boring mill; schedule 9732, two motor-driven screw-cutting geared-head lathes; schedule 9738, two motor-driven sensitive drills and equipment, for Norfolk, Va.

MACON, GA.—City council is making plans for a bond issue, if recommendations of a special committee favors building an electric distribution system and power plant.

MEMPHIS, TENN.—Schrader-Easley Co., distributor of Follansbee sheet metal, has leased a warehouse at 405 North Main street for use as its distribution center.

RICHMOND, VA.—Virginia Electric & Power Co., J. G. Holtzclaw, president, 700 East Franklin street, Richmond, Va., plans improvements and extensions to cost $1,000,000 in Richmond and adjacent areas.

Oklahoma

ARDMORE, OKLA.—Mayfield Boiler Shop has been incorporated with $5000 capital to repair and weld boilers, by Elmer Mayfield.

Texas

AMARILLO, TEX. —Crescent Foundry Co., 1210 Johnson street, will take bids soon on a 2-story foundry plant, 60 x 80 feet, with equipment.

FORT WORTH, TEX.—Marathon Oil Co., subsidiary of Ohio Oil Co., Findlay, O., has let a contract to M. W. Kellogg Co., New York, for installation of a 1500-barrel cracking unit at its refinery here. Plant improvements to cost about $1,000,000 are planned.

FORT WORTH, TEX. — American Airways, subsidiary of the Aviation Corp., New York, will start construction at once of hangars, offices and shops at the airport here. Lyndol Young, vice president, New York, is in charge of plans.

HOUSTON, TEX.—Houston Construction & Engineering Co. has been incorporated with $25,000 capital, by Carl Thorgensen, president.

KILGORE, TEX.—Panama Refinery, recently burned, will be rebuilt at once, according to A. F. Anding, president and manager.

LONGVIEW, TEX.—W. C. Goforth and H. D. Landers, Longview, are forming a company to build an oil refinery near here, to cost about $100,000, including equipment.

LONGVIEW, TEX.—Heartfield Refining Co. has been incorporated by C. A. Heartfield, Shreveport, La., president, to operate a refinery in the oil fields near here.

Wisconsin

JANESVILLE, WIS. — Janesville Fence & Post Co. is resuming production on a moderate scale of barbed and woven wire for spring delivery. It also distributes metal fence posts for other makers. James B. Harris is general manager.

MARINETTE, WIS.—Rasmussen Machine Works is clearing the wreckage of its burned plant and will start shortly on construction of a new shop. Rasmuss Rasmussen is president.

MILWAUKEE — Blower Application Co. has been incorporated to operate agencies for distribution and installation of heating and ventilating systems, by W. Kussmaul, C. H. Jackson and W. J. Janssen.

Minnesota

ROBBINSDALE, MINN. — Arthur Clunis, 3948 Adair street, has opened a welding plant at 3117 West Broadway, to do general welding.

North Dakota

FARGO, N. DAK.—Northwest Airplanes lost its hangar and machine shop by fire with loss of $23,000, following a gas and oil explosion.

Kansas

LARNED, KANS.—C. C. Chase has built a machine shop and operations have been started in general machine work.

WINFIELD, KANS.—P. J. Sonner gas burner plant, manufacturer of oilfield burners, suffered severe damage to its foundry by fire recently.

Colorado

FLORENCE, COLO.—Continental Oil Co., Carl Tillman, superintendent, will rebuild its refining still recently destroyed by an explosion, at a cost of about $25,000.

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